

THE FAR EASTERN REVIEW

ENGINEERING FINANCE COMMERCE

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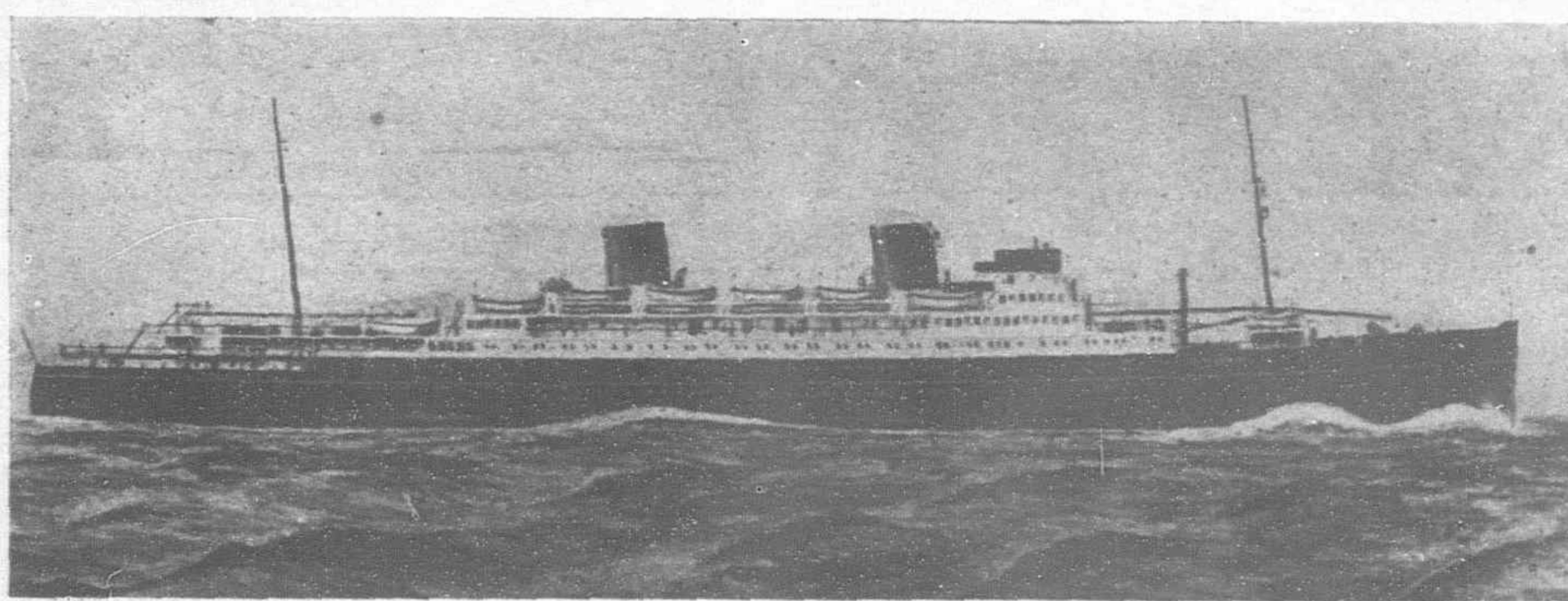
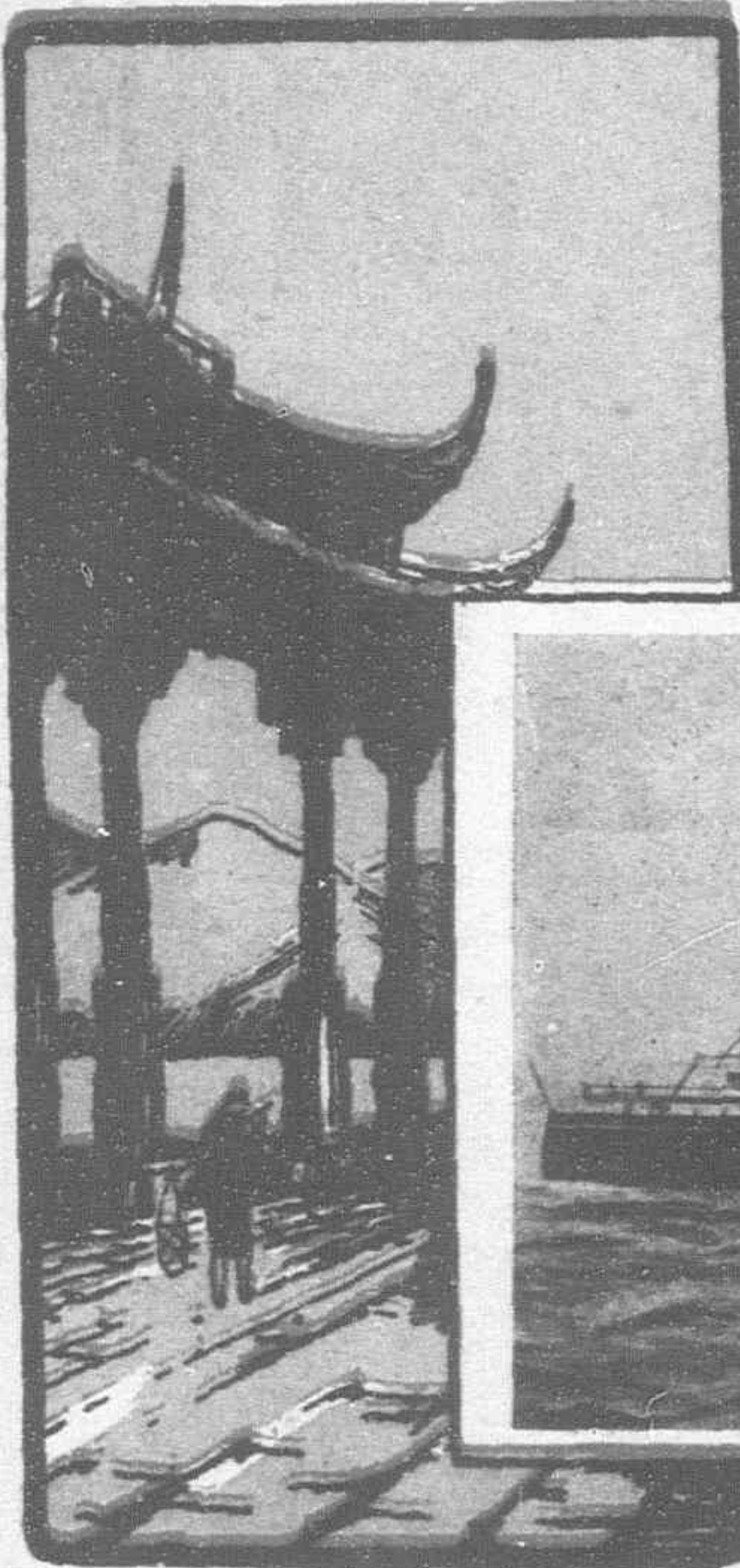
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SHANGHAI, PEKING, TOKYO AND MANILA

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Is it the Chinese View?

THE Nanking Government has cut itself away from Communists and semi-communists, from the propaganda gang who earn their living stirring up trouble and whose perverted views have brought nothing but suffering and misery to millions of Chinese and to the thousands of foreigners who live in China. The Ministry of Foreign Affairs of the Nanking Government, under the administration of Dr. C. C. Wu, has avoided the startling fire-works, the insulting anti-foreignism, the futile sophomoric essays which marked the Trinadadian activities of Mr. Eugene Chen in Hankow. There have, of course, been protests against foreigners and there has been an effort to break the treaties by taxation, but even where we can disagree with Dr. Wu and his Government, there is no need to stoop to undignified quarreling, to the pettiness of the fish market, to armed mob invasions of the homes and business places of the foreigners. Mr. Eugene Chen was possessed of dramatic skill and a powerful pen, but his taste was that of a scullion turned into a Mrs. Jiggs and he accomplished nothing more for his country than to bring to China the largest fleet of foreign men-of-war ever to guard her rivers and the largest body of foreign troops ever to billet on her soil.

It was then with pity and sorrow more than in anger that one viewed the stupid and nasty bit of mendacious propaganda foisted upon the Nanking Ministry of Foreign Affairs. The propaganda was an attack and a threat at the American Chamber of Commerce, whose statements to the American people and the American Government, have been fully borne out by events in China and by the official manifesto of the Kuomintang Central Executive Committee which we publish in full elsewhere in this issue. The Kuomintang admits Communist activity. The Kuomintang now denounces Communist activity, but the attack on the American Chamber of Commerce criticizes the Chamber for warning its Government that American lives and property in China were imperilled by the presence and activities of Communists in China.

The attack on the Chamber is issued by the official *Kuo Min News Agency*. It does not in a single characteristic bear the earmarks of anything previously or since issued by that news agency. It does not represent the Chinese viewpoint. It does not represent the official viewpoint of the Nanking Ministry of Foreign Affairs. It may represent the Russian idea of what should happen in China. It may represent the attitude of a few denationalized Americans who bait the Chinese on to hate all things American because of their personal dissatisfaction with American policies and American ideals, but it is not normally Chinese. The Minister of Foreign Affairs of the Nationalist Government, Dr. C. C. Wu would be incapable of the indecency of a threat. If he objected to anything that the American Chamber of Commerce did, his objections would be couched in the studied language of a gentleman.

All Chinese object to the presence of foreign troops in China. That is axiomatic. There is, however, a borderline between such objections and the conviction of many Chinese and all responsible foreigners in Shanghai, that were the British troops not here on March 24 of this year, Shanghai would have been a shambles, as Nanking is a shambles to-day. No nation can avoid censure, even in a revolutionary period, which permits its own troops, as the 6th Nationalist Army did in Nanking, to murder, attack, loot and ravage foreigners in their midst—or even their own people. The American Chamber of Commerce protested against the dangers in which Americans in this region of China found themselves as a

result of the mob activities of the Communistically led armies of the Nationalist Government. It requested the American Government to protect Americans in China, not from the Chinese people, but from the Communistically led and trained troops who were mauling through this area, directed by Russian and Chinese Communists and supported by American, British and other foreign Communists, who were enjoying the spectacle of murder and rapine. It was the duty of the American Chamber of Commerce to make such a demand. The American Government has adequately responded to that demand. These requests were made during the months of March, April and May. But it is not until August that the *Kuo Min News Agency* sees fit to become vehement. Why?

The following is the stupidly written attack on the American Chamber of Commerce:

The attention of the Nationalist Government authorities has been called to the activities of the American Chamber of Commerce in Shanghai, which organization apparently has departed from the usual policy of a trade chamber and is devoting itself to propaganda calculated to induce the American Government to intervene in a military way in China.

In this connection, a spokesman of the Ministry of Foreign Affairs (*Who is the spokesman? This almost sounds like an American journalistic imitation of the White House.*) said to-day that particular attention had been directed to recent resolutions and cables which have been sent to Washington, D. C., by the American Chamber demanding that the American Marines be used to prevent China from increasing her Customs duties.

In addition to this recent action, reports have reached the Government from the United States that the American Chamber of Commerce in Shanghai has been circulating newspapers and trade bodies in America with "literature" compiled by notorious tools of local "diehard" interests which contain unwarranted attacks upon the Nationalist Government and its officials, the general purpose of which apparently is to get the American Government to become embroiled in the imperialist conspiracy for military intervention in China.

In reference to the activities of the American Chamber of Commerce in Shanghai, referred to in the foregoing, the Foreign Office spokesman pointed out that whilst the Nationalist Government welcomes legitimate criticism and co-operation on the part of foreign commercial organizations in China, nevertheless when a foreign chamber of commerce, such as the local American organization, departs from legitimate commercial pursuits and transforms itself into a propaganda organization for the dissemination of information inimical to the friendly relations of China and America, then it becomes a matter of serious concern which the Nationalist Government cannot overlook.

China and America have enjoyed peaceful and friendly relations for nearly a century and a half, the first American commercial ship visiting Canton only a short time following the successful conclusion of the American Revolution against domination by European Imperialism. For many years American merchants traded peacefully at Canton with the Chinese merchants even before China and America entered into treaty relationship. America has never been aggressive toward China as have other nations; and China has almost always been able to look to America as a disinterested friend at critical periods, as, for instance, the Open

Door Policy, the return of the Boxer Indemnity, and the efforts of Secretary Hughes to give China a square deal at the Washington Conference.

Unfortunately, however, the local American Chamber of Commerce seems to have come under the influence of certain European imperialistic interests and for several months has been conducting a propaganda which is detrimental to the friendly relations of China and America and also detrimental to the best interests of those American merchants solely concerned in the development of trade between China and the United States. In view of the

fact that the American Chamber has its headquarters on Chinese soil, the Nationalist Government is forced to call attention to this matter and to issue a warning that, unless the American Chamber ceases its underhanded activities, the Nationalist Government will be forced to bring the matter to the attention of the American authorities and ask that action may be taken by the American authorities to curb the Chamber whose pro-imperialist activities serve merely to provoke and alienate all Chinese interested in the continuance of friendly relations between our country and America."

Who's Looney Now?

The Kuomintang Gives Lie to Denationalized Americans' Propaganda that there is no Communism in China
All Communists Driven Out of Nanking Government

WERE there no Communists in China, there would have been no necessity for fighting them. The fight against the Communists has never been conducted against them by the foreigners with the severity that is now being meted out by the Kuomintang itself. The Kuomintang and the Nationalist Government are fighting a death struggle against the Communist Party of China. *This belies the insidious and deceitful propaganda that there is no Communism in China.* The very fact that men have been driven out of the Kuomintang because they were Communists proves beyond a shadow of a doubt that most of the trouble which the foreigners have experienced in China during the past year was the work of Communists. *That is all that the foreigners have been contending.* They have been insisting that they can get along well enough with the Chinese people and with the average Chinese official; they have been stating that they bear no animus towards the Chinese people. They have been pointing to the fact that the so-called Nationalist Movement, as it was directed from Hankow, was not a Chinese movement. It was Russian; its leader was Comrade Borodin; its object was not to assist China but to utilize China as a battlefield on which Russia would fight the Western world.

For almost a year, decent men in the Kuomintang felt that it was necessary for them to shield this nefarious Government and to protect the miserable creatures who did the Soviet's bidding. These men were motivated by the ideal of shielding their people from shame. Their Party had formed an unfortunate alliance, in the course of which China had made serious mistakes and had been led astray into attacking her best friends among the Powers. This policy was known to be wrong, but it was and it still is difficult for men to admit so disastrous an error. They held to the Russian alliance as long as possible, but finally, the Russians spoiled their own position by imposing upon the Chinese a dictatorship, which no men could tolerate and live.

General Chiang Kai-shek was the first to break away from Hankow and its horrors and deceit. He joined with a group of anti-Communist Kuomintang leaders to establish the Nanking Government but even these leaders were not at the time strong enough or brave enough to state frankly their opposition to Communism. Even when they organized a Party Purification Movement, they entered somewhat half-heartedly on the job, because they knew that the day would come when they would have to make their peace with Hankow and they did not want to go irrevocably in any one direction. They could not have known then that the more conservative and decent elements in the Hankow Government were as fully opposed to Communism and the Communists as they were. Had they realized that, union between Hankow and Nanking might have been achieved earlier. For the principal obstacle was the presence in Hankow of Comrade Mike Borodin, the Soviet agent in China and his host of Russian, German, American and British Communists who were serving him in the disruption of China as a state.

The Menace of Communism

The Nationalists have now had their fill of associating with Communists. They have come to realize how dangerous it is for

them and their country to entrust their destinies to this brood of trouble-makers, these parasitic disturbers of everything that even resembles law and order. The Communists came to China to produce confusion here, so that trade and industry would be interrupted, so that the British, American, Japanese, French and other foreign traders might be forced to leave the country because of the dangers in it to their lives and properties and because profits could not possibly be made out of a confused and disordered country. Then Russia would have a whack at China alone. Instead of China being protected, as she has been these years, by the jealousies of the Powers who never could take advantage of her weakness because there was always some Power which opposed partition and spoliation, China would be at the mercy of the arch-imperialistic spoliator, the country which has already stolen Mongolia and plans to steal Manchuria, Soviet Russia.

The Kuomintang now admits the error of association with such a country, but there are still denationalized Americans in China, who apparently believe that it is to the best interest of China to be a slave of Soviet Russia than a free nation among the family of nations of the West; there are some few irresponsible Americans who would rather that China be the international running-dog of Soviet Russia than that she should achieve equality with Great Britain, the United States, Japan, France, Italy and the other Powers of the west by internal reconstruction, by achievement and international recognition.

Who are These Serving?

And that leads us to question the motives of these men. Surely they cannot be serving the United States when they advocate that the United States should withdraw all Americans from China, should take out her missionaries and merchants and leave the land the prey of the Russian Communist. The United States had made large investments in China in business and through the contributions to health, education, churches, schools, hospitals with which the missionaries have dotted the land. Surely no Americans can see these symbols of American culture and civilization turned into stables and temples of atheism, into barracks and brothels, into shambles, by the Chinese Communists upon the instigation of the Russians. If these so-called Americans believe that everything American is so vile and useless, why do they not become Soviet citizens and live under Soviet rule? Why do they benefit by American treaties when they live in China? Why do they accept American protection? Why do they live under the extraterritorial provisions of the treaties? Why do they not become Russians frankly and openly?

Enemies of China

They surely cannot be friends of China, for the withdrawal of Americans and American interests from China would take from this country her best friend since the opening of Canton to foreign trade a century ago. From Burlingame to Rockhill, from Rockhill to MacMurray, it has always been the American Minister to China, who has been a loyal friend of the Chinese people and who has sought to protect the Chinese people against their own weakness. The

United States, in the councils of the world, has ever been the representative of a friendly policy toward China, has ever sought to obtain for China a square deal in international councils. If the American missionary were permanently withdrawn from China, American interest in China would cease and China would ever be a prey to such predatory nations as Soviet Russia, who are seeking to enlarge their territory at the expense of the smaller and weaker nations of the world. But more than that. It is the United States which is to-day protecting China against retaliation for all the evils which have befallen foreigners in that country since the Communists had a free hand in the southern provinces. Were it not for the United States, China should probably have had to pay in full measure for all the lives lost, the property destroyed, the misery brought to peaceful citizens of European nations and Japan living in China during those frightful days of the first half of this year when the Communists ran riot in South China and the Yangtze Valley. *China needs the United States. Without the United States China could not maintain her independence even as the semi-colony that Dr. Sun called his country. For the Communists would precipitate an international war on Chinese soil and China would be helpless. The Americans who would make China helpless by turning her into a slave of Soviet Russia are not China's friends; they are her implacable enemies.*

With regard to the Kuomintang attitude toward Communism, let the Party speak for itself:

The Kuomintang Manifesto (Kuo Min News Agency)

The Kuomintang, as a Nationalist Revolutionary party, was first organized by our late leader, Dr. Sun, under the name of Shun-chun-hui. It was later reorganized, and at different periods, had assumed the names of Tung-men Nationalist Party and Chun Hwa Revolutionary Party, until the 9th year of the Republic (1920) when it underwent the final reorganization, under its present name, the Kuomintang of China.

In 1924, our late leader decided upon a policy of admitting members of the Communist Party into the Kuomintang. The idea which prompted our late leader to the adoption of this policy was founded on the realization of the danger that must entail from a wholesale importation of the totally alien theory and ill-suited policy of Marx and Lenin. It was to prevent such unfortunate possibility of an erroneous diagnosis, that he decided to open Kuomintang membership to followers of communism—that they may yet have opportunity to realize the comparative feasibility of the "Three People's Principles" to the Class Struggle Doctrine of Mark and the Dictatorship of the Proletariat, or, even the latter day New Economic Policy of Lenin, and become thus loyal and useful members of the Kuomintang.

This radical departure from the party history hitherto, was not unopposed by its members; but they were, nevertheless, confident in the courage and capacity of our late leader to proselytize the Communists to the cause of Nationalist Revolution. They were further reassured by the joint statement of Dr. Sun and the Soviet representative, Mr. Joffe, declaring to the effect that Soviet Russia was to help Nationalist China in her effort to combat imperialism and to carry on the mission of the Nationalist Revolution, without any such bargaining condition of privilege to carrying on communist propaganda in China. The members of the Communist Party in China, while joining the Kuomintang, had, likewise, solemnly pledged that they joined the party in their capacity as individuals, believing in the principle of the Kuomintang.

Western Hills Conference

In the 3rd month of the 14th year, (March, 1925) we were bereft of our leader. This sudden loss of leadership in the party was seized by the Communists as a heaven-sent opportunity to start on their nefarious machination. Certain members of the Central Executive Committee were immediately alert to this fact, and contemplated bringing the communists to account. A conference was forthwith called in the eleventh month of the same year (November, 1925) in the Western Hills of Peking, where rested the hearse of our late leader, with the view to purging the party of the alien elements.

This unfortunately precipitated a split among the party members. The other members of the Central Executive Committee in Canton, religiously adhering to the policy of our late leader, could not bring themselves to agreement with the proposals of "purification;" with the result that the anti-communistic members of

the party were forced to call a Kuomintang delegate congress in Shanghai, electing their own Central Executive and Supervisory Committees and organizing their own Central Party Headquarters.

The existence of two party Headquarters concurrently, one in Canton and the other in Shanghai, was, therefore, the result of disagreement as to the retention and expulsion of the communist members in the Party.

Then came the Northern Punitive Expedition; and the party headquarters and the Nationalist Government hitherto in Canton were removed to Nanchang and then Wuhan following in the wake of the victorious northward march of the revolutionary army.

This transitional period was again utilized by the communists, whose dastardly efforts, in the name of the central party Headquarters and the Nationalist Government, became ever the more manifest. They monopolized the so-called "mass movement;" and in the company of the worst social elements, thieves and riff-raff, created disturbances in all the quarters freshly conquered by our army.

A Grave Danger

The members of the Supervisory Committee could not but view this development as grave danger threatening the very existence of the Party and the Government. Whereupon they instructed the Executive Committee to instruct in turn the different party headquarters to deal rigorously with the activities of the communists and their followers in deliberately discrediting the Nationalist Revolution. Thus, simultaneously, the purification movement was launched in Kuangtung, Kuangsi, Fukien, Anhui, Kiangsu and Chekiang.

The purification movement gave birth to the Central Party Headquarters and the Nationalist Government in Nanking in control-distinction to the Headquarters and Government then already established in Wuhan. This further split, therefore, was also the result of disagreement, "as to the retention and expulsion of the communist members in the Party."

While the purification movement was being carried out in full measure in the six provinces, the responsible members in Wuhan unearthed a plan of the Communist Party to destroy the Kuomintang. The document proved beyond a shadow of doubt the basic incompatibility between the Kuomintang and the Communist Party, and the Wuhan comrades, in this new light, were convinced of the necessity of departing from the late leader's policy toward the Communists. On the 15th of the seventh month (July 15) Hupeh, Hunan and Kiangsi joined with the six provinces in the purification movement, which fact, incidentally brought in line the hitherto broken front of the Nationalist Revolution.

Anti-Communist Policy

Since the sole issue of disagreement has now been removed and the Kuomintang is now unanimous in its anti-communist policy there is no further reason for the co-existence of organs of similar nature and function. It was in view of this fact that the formation of the Central Special Committee which embraces all members of the three headquarters (Shanghai, Wuhan, and Nanking) was proposed for sanction at the joint meeting of the Central Executive and Supervisory Committees in Nanking.

The Central Executive and Supervisory Committees, in their joint meeting in Nanking, duly sanctioned the formation of the Central Special Committee to act in the joint capacities of the Central Executive and Supervisory Committees, and in such capacities to reorganize the Nationalist Government and to arrange for the third convention of the Kuomintang National Congress, scheduled to take place in the first month of next year. (January, 1928).

Automatically from the date of the formation of this Special Committee, the three specially created headquarters were to cease their existence; and, likewise, the unkind words hitherto exchanged as a result of misunderstanding be consigned to the limbo of the forgotten past.

We, the Special Committee, hereby declare to carry on the legacy of our late leader and to submit to the will of the Party. We further pledge, on one hand, to continue the purification movement that the Party shall not have one single disloyal member in its midst; and on the other hand, to continue the Northern Punitive Expedition, and to endeavor to bring about in the shortest period the unification of our country, and the realization of the Three People's Principles that our people may sooner be delivered from their present mire of suffering and misery and we, as members of Kuomintang, may sooner fulfil our mission and duty.

Another Anti-Communist Manifesto

Issued by the Nationalist Government upon its Inauguration

This government, recreated by the Central Special Committee of the Kuomintang and delegated by the committee to take sole charge of the administration, will, at this time, when the party as yet has not been thoroughly purged of the Communists, and the Northern Punitive Expedition waiting to be continued, adapt itself to the demand of time and circumstance in its effort to realize the stated policy of the Kuomintang.

This Government recognizes its immediate duty to be twofold: namely, the purification of the Party and the continuation of the Northern Punitive Expedition.

While the major plot of the Chinese Communist Party to destroy the Nationalist Revolution was suppressed in time, communists are still active in their nefarious machination to reinstate themselves into their former position of power. This Government maintains that the faithful adoption of fundamental and constructive measures, effecting thorough revision which will give our people the normal and healthy economic life entitled to them, is the most effective way to prevent further communistic infections. This Government will, therefore, foster the idea of popular government as an antidote to the doctrine of class dictatorship; encourage co-operation between labor and capital to their mutual benefit, discrediting thus the fallacious notion of class struggle; safeguard and assist industrial enterprises in order to avoid depression and bankruptcy and the

consequent unemployment; popularize education that the mass cannot be easily led against their better judgment; and lastly establish and increase the number of institution of learning, affording thus more extensive opportunity to our youth for useful study and training as the best safeguard against the influence of strange and bizarre doctrines to unprofitable and destructive venture.

As to the barbarism of Northern militarists and the misrule of the Peking mandarinat, this Government will affect their extermination by the powerful weapon of the Nationalist Revolutionary Army. Yet the evils of the Northern militaristic government should, nevertheless, be viewed as an example held up to us, that our sole endeavor shall be to correct ourselves of their feudal usages. When their soldiery are employed to plunder the people, so much the more shall our belief in the ideal of a people's army be strengthened; when their nepotism and corruption are airing their stench, so much the more shall we be vigilant in observing the precept of self-sacrifice; when they are laggard in their supineness, so much the more shall we brace ourselves to a life of earnestness and diligence—that their chronic habit of barbarity, corruption and solvency be fundamentally wiped clean, following the extension of the revolutionary influence.

Regarding the major policy or programme, this Government will faithfully follow that which has been already laid out by our late leader in his "Principle of National Reconstruction;" carrying out the designated three stages of military control, political tutelage, and republican government as allowed and warranted by time and circumstance, so that this Government may not disappoint the cherished hope of our people and abuse the trust of the Party.

Tientsin Port Conditions

The following is from a recent issue of the "*Peking and Tientsin Times*:"—

A very serious situation is revealed in the reports on the state of the Haiho. This is the second occasion this year on which the river has suddenly and rapidly shoaled up as a result of abnormal conditions in the drainage of the hinterland, and though conditions rapidly improved after the spring freshets had subsided, and we are assured that the present state of the river is only a temporary set-back, it is most disturbing when a situation suddenly arises in which not even vessels drawing ten feet of water can safely make the passage from the Bar to the Bund. The gravity of the situation can perhaps best be realized when it is mentioned that last year vessels drawing eighteen feet of water were able to proceed to Tientsin on an ordinary tide, and that the projects on which the Conservancy Board is engaged were expected to deepen the Bar to 25 feet and permit steamers drawing 20 feet to reach Tientsin.

The reasons for the present state of affairs were explained in considerable detail in a statement furnished by the Haiho Conservancy Commission. It is our ancient enemy the Yungtingho which is once more to blame. It has been discharging an unusually high percentage of silt, and the less silt-laden waterways have not been doing their duty in the matter of diluting and scouring out this solid matter. It is impossible under present conditions, to provide an effective artificial remedy. A certain amount of dredging can be, and is being done, but the rate at which the river has been silting up makes it obvious that dredging alone will not suffice, and that we must await with what patience we can the subsidence of the Yungtingho, and the beneficial effects of a relatively larger inflow of purer water from other tributaries. The only positive cure for the present state of affairs—the diversion of the Yungtingho—is too ambitious and too costly a project even to be seriously thought of at the moment, and would, moreover, require some eight years for its completion. Conservancy work on a large scale is a luxury which cannot be thought of while all the financial resources of this and other parts of China are been devoted to civil strife. Plans for the radical cure of the Chihli drainage system must await the day which still seems so far distant, when China possesses a stable Government, has restored her international credit, and can devote her energies to constructive rather than destructive efforts.

It is particularly unfortunate, however, that the Haiho should be giving so much trouble at a time when Tientsin is almost entirely dependent upon it for communication with the outside world. Through traffic on the Tsinpu railway to the Yangtze and beyond

has not been practicable for many months. Nor is it possible to reach the Yangtze Valley via Peking and Hankow. In the event of the Bar silting up to the same degree as the river, the sole feasible means of communication between Tientsin and Mid and South China will be via Chinwangtao, relying on a railway which has often been interrupted in the past, and which has not the haulage power or other equipment necessary to cope with any sudden increase in goods traffic. Fortunately the Bar does not show any signs at the moment of silting up to an extent sufficient to exclude coastal shipping. And it is to be hoped, therefore, that there is no serious danger of Tientsin's being completely cut off from the sea during the next few months.

While, however, present conditions last, and Coasting vessels find themselves compelled to land passengers, and discharge cargo, at Tangku, it ought to be possible to evolve some more satisfactory method of taking on and landing passengers than those at present employed. It is, of course, not only irritating but absolutely unnecessary that inward bound passengers should be detained at Tangku for nearly 24 hours after the vessel comes alongside the wharf. And as practically every ship now coming North from Shanghai carries a full complement of passengers, it ought not to be beyond the power of the various shipping Companies to devise means for the speedy landing of their passengers, and their prompt conveyance to Tientsin. If tugs or tenders or even ice-breakers are now available in sufficient numbers, or the state of the river does not permit of their employment, it will, of course, be necessary to fall back upon the railway. Trains from Tangku are not very frequent, but it would, we fancy, be possible for the steamship companies to obtain, and hold at the most convenient point, a special car or two for the use of their passengers. In the case of Messrs. Butterfield and Swire, whose arrangements for the landing of their passengers were criticized in our last issue, there appears to be no reason why they could not arrange for a car or cars to be held on their own sidings, to be attached to the first Tientsin train that leaves after the arrival of their steamer. There are several other wharves with siding coming down to the water's edge, at Tangku, which, it would seem, might be used by other incoming steamers during this emergency. And the cost of obtaining special cars for the purpose of conveying passengers and baggage to Tientsin would not, we imagine, exceed the aggregate fares that would be paid in any case. Certain it is that if the experiences of the *Tungchow* passengers are repeated in the case of each incoming steamer from the South the travelling public will have just cause for indignation.

Hope in the Offing

The New Nanking Government a Genuine Chinese Effort A Union of Kuomintang Factions

By George E. Sokolsky

THE fact that the Nanking Government survived at all is a noteworthy indication of the inherent strength of the Kuomintang as a political party. The Nanking Government was founded as a protest within the Kuomintang to the assumption of dictatorial powers by Michael Borodin, the Soviet advisor to the Nationalist Government in Canton and Hankow. General Chiang Kai-shek was largely responsible for bringing the Nanking Government into being. He joined a group of conservatively minded Kuomintang leaders in Shanghai who had either resigned their offices because of the predominant Russian voice in the affairs of the Kuomintang or who had been driven from the party through the influence of Borodin. These men were, on the whole, personally not well disposed towards General Chiang Kai-shek because he had at various times done the bidding of Borodin when to follow the Russian did not appear to be to the best interests of the Kuomintang as a party or of China as a state. Nevertheless, they felt that it was a grand opportunity to strike at the Russian system within the Kuomintang.

From the very outset the Nanking Government found itself faced by insuperable problems. It inherited the dissatisfaction of the foreign Powers over the Nanking Outrage, which it was apparently unable to settle, owing to its inability to take physical possession of those responsible for the outrage, who were under the protection of the Hankow Government. Nanking therefore did not receive

any form of international recognition. result was that the Nanking Government soon found itself in further international difficulties, while the Chinese merchants protested against ruinous taxation. Then General Chiang Kai-shek permitted men to act in his name who were extorting money from merchants and responsible Chinese on the plea that they were suppressing Communism. This resulted in an outcry against all Nanking officialdom.



Dr. C. C. Wu, Minister of Foreign Affairs

In the face of all these problems, Nanking had to conduct two wars, one against the Northern militarists who were firing into the very capital from Pukow and the other against their former friends in Hankow, who were sending Communist armies to destroy Nanking as a counter-revolutionary capital. Successful in the war against the Northerners, coming within four days of Tsinanfu, the capital of Shantung, the Nanking Government had to withdraw their troops from North China and utilize them entirely for defensive measures against the Communists from the South. For a moment, it looked as though the Nanking Government would go out of existence and the Kuomintang would become the property of the Communist Party of China and would be utilized by the Russians to foist upon China Soviet political and economic ideas.

Desire for Union

The anti-Communist civilians of the Hankow Government were growing increasingly embittered by the imperialistic methods of

Comrade Borodin in Hankow. They wanted a union of forces with Nanking. They sought a way to save the Kuomintang, but their desires could not be brought to realization by the presence at the head of the Nanking Government of General Chiang Kai-shek, with whom they were personally no longer on speaking terms. There had been a campaign of vituperation when General Chiang Kai-shek had broken with Hankow, so

To set up a Government and protect it from numerous enemies required a huge budget which could only be raised by extraordinary methods. The Nanking Government was unfortunately weak in financial talents. Its financial program was a monstrosity of ignorance and inability to co-ordinate governmental financial necessities with the welfare of the people and the taxable maximum of commodities. The



Dr. Tsai Yuan-pei, Chancellor of the Nationalist University



Mr. Sun Fo, Minister of Finance



General Tan Yen-kai



General Li Lieh-chun



Mr. Hu Han Ming

THREE MEMBERS OF THE STANDING COMMITTEE

that he, as an individual, could not meet with Hankow's anti-communists and they felt that they never could join a Government which he dominated. At the same time, the military men in Nanking felt that in fighting the Hankow armies, they would only be shooting down their own colleagues and natives of the provinces from which they came, while the only ones to benefit by their strife would be the northerners who could then occupy Nanking and destroy the prestige of the Kuomintang.

At that moment, General Chiang Kai-shek showed himself to be a really big man. He resigned and retired to his native village, Fenhua, near Ningpo. Here he removed himself from the scene of political activity. He paved the way by his resignation for a reunion of the Party. But unfortunately, old-fashioned Chinese ideas impelled

five of the principal men of the Party, now historically known as the "Five Weepers of Nanking," because in their telegram they referred to themselves as having shed their respective quota of tears, to resign with him. This so weakened Nanking that for a time, it appeared as though the Government would fall. Dr. C. C. Wu went to Kiukiang at the invitation of the anti-Communist civilians of the

Hankow Government to discuss terms of peace and Mr. Sun Fo and General Tan Yen-kai came to Nanking.

But while these peace parleys were under way, the Northern troops under Marshal Sun Chuan-fang actually found a way of crossing the Yangtze River near Nanking and near Chinkiang. A battle followed along the Shanghai-Nanking Railway, and for a time it looked as though Marshal Sun Chuan-fang was about to occupy Nanking and take Shanghai. Again the Kuomintang was fighting for its life. The future of the Nanking Government was uncertain. But finally, the Northerners were defeated in one of the most terrific battles ever held on Chinese soil and the Nanking Government had another lease of life.

Conferences were immediately entered upon at the residence of Dr. C. C.

Wu in Shanghai between the anti-Communist civilians of Hankow, the Nanking Government and the old Western Hills Conference Group of the Kuomintang. This group is of particular interest, because they have opposed the Russians and Communism ever since the arrival of Comrade Borodin in China. While the younger and perhaps less idealistic members of the Kuomintang were



Mr. Wang Ching-wei of the Standing Committee



Mr. Wang Chung-hui, Minister of Justice

reaping the rewards of a victorious party, these men were sitting in Shanghai, excluded from party activity, although most of them had been associated with Dr. Sun Yat-sen at the very inception of the Kuomintang previous to the 1911 Revolution. There could never be unity in the Kuomintang with these men left out of the Party and out of the Nationalist Government. In spite of what appeared to be insurmountable difficulties, the Kuomintang reunited and a new Government was formed in Nanking, the manifesto of which appears on page 383 of this issue.

The new Government has started off right. It has announced that it would reduce the military expenses by fifty per cent. and that it would reduce the size of the Nationalist army. During General Chiang Kai-shek's regime, the Nationalist army grew to such enormous dimensions, that it became unwieldy and tended toward feudalization. Many of the troops, which has been bought over from the North, were not to be trusted and proved to be weak links in the Nationalist defensive operations. A smaller but more disciplined, more centralized and more trustworthy army would undoubtedly be of greater value to Nationalist success than the huge legions which General Chiang Kai-shek retained. And this army ate up all the revenues of the Government so that little was left for civilian administration. To meet the constantly increasing demands of this army, the Nationalist Government had to resort to tax measures, which were only too obviously insidious and which antagonized the masses of the Chinese people, while they involved the Government in an impossible foreign policy. The reduction of the army is a tremendously progressive step.

The question of the future of the Nanking Government is not as easily discussed. It has many enemies. General Tang Seng-chi, Marshal Feng Yu-hsiang and many other militarists who call themselves Nationalists are really enemies of Nationalism. They are feudalists. They are seeking only their own interests. They will attack and attempt to destroy all efforts toward civilian Government of Nanking. From now on, it is a stern battle between all forms of militarism, northern and southern, and the movement toward civilian Government in China as it is being experimented with in Nanking.

As to the foreign policy of the Nanking Government, it is bound to be realistic. No Government could stand, at this moment of intense public opinion, which did not favor an end to the unequal treaties which China aspires to abolish. But Nanking will make no attempt to achieve a diplomatic victory at the expense of decency and the rights of foreigners under the treaties. Nanking will first seek recognition and then a revision of the treaties by negotiations. The Powers will watch Nanking's efforts with the keenest interest. But before Nanking can hope to accomplish anything like a diplomatic success, it must establish itself firmly in whatever territory it claims to control.

The foreign powers will have to realize, on the other hand, that to wait for this vast territory to be unified before they deal with any of its components is fatuous. As Senator Bingham said, we must deal with whomsoever controls territory in China.

The Government will consist of seven ministries and two councils, one for education and the other for military affairs. Although in the reorganized Kuomintang, the committee system still obtains, in the Government, this system has practically been discarded as not producing efficient results. Not all the ministries have been filled but the following have officially been announced:—

Minister of Foreign Affairs: Dr. C. C. Wu

Minister of Finance: Mr. Sun Fo

Minister of Communications: Mr. Wang Pei-chun

Minister of Justice: Mr. Wang Chung-hui

Chancellor of the National University Council Mr. Tsai Yuen-pei.

Supervising these ministries will be a Standing Committee of five members consisting of Wang Ching-wei, Hu Han-min, Tan Yen-kai, Tsai Yuen-pei and Li Lieh-chun. The real purpose of this small committee is to avoid the conflict which an attempt to select a president might engender. Messrs. Wang Ching-wei and Hu Han-min will for some time be absent, thus bringing the Standing Committee as an actuality down to three working members. These with the Ministers will constitute the Executive of the Government.

Declaration of Policy

The following declaration has been issued by the Nanking Government:—

The Nationalist Government of the Republic of China was first established in July, 1925, shortly after the death of our late leader, Dr. Sun Yat-sen. At that moment the Imperialists with their militarist partisans were out on an extensive campaign aiming at the fundamental extirpation of the Chinese revolutionary movement. There was bloodshed and massacre, and events fraught with equally tragic import followed one after another; the life of the nation hung, indeed, on a thin thread, with its people seething with resentment.

The Kuomintang, ever mindful, as it has always been, of the mission entrusted to it by the late leader, was for the moment apprehensive that it might not succeed in completing the Nationalist Revolution; yet its effort was undeterred. In face of colossal difficulty, after having wiped out the armies of the two counter-revolutionists, Liu Chen-huan and Yang Hsi-min, it established the Nationalist Government to carry on the high undertaking of the Revolution.

In the short space of two years, not only was South China unified, but the provinces bordering on the Yangtze were also successively conquered by the Northern Expeditionary Armies; the influence of that Revolution has extended now as far as the Yellow River.

This amazing military success could only be explained by the fact that the "Three People's Principles" and the other policies laid down by our late leader have been so deeply implanted in the minds of the people, that they look forward to the success of the Nationalist Revolution with equal eagerness, as the people of a region parched by drought look forward to the all-soothing rain. The military success is, indeed, the victory of Dr. Sun's principles made manifest.

The Evils of Communism

It was, therefore, most unfortunate that a serious split should have come about last April, as a result of the machination of the Communists, who realized that once the Nationalist Revolution under the direction of the Kuomintang should have been brought to a successful conclusion, their dream of Communist dictatorship could never be realized. Their machinations created disturbances in the Revolutionary forefront, and thanks to their redoubled effort and masterly intrigue, precipitated what was at first an internal schism into an open split with the result of the emergence of the dual National Governments in Nanking and Wuhan. Meanwhile, the responsible comrades of both Governments labored to continue the Northern Expedition, but, nevertheless, opportunity was given to Sun Chuan-fang to make his fleeting attack on the southern bank of the Yangtze and Chang Tso-lin to maintain his stronghold in northern Chihli. Although the guilt leading to these mishaps could all be traced to the Communists—and their crimes merit the most severe punishment,—yet we cannot help regarding this unfortunate episode without poignant and painful regret.

Now that the treasonable plan of the Communists has been totally unearthed, and the Kuomintang once more united under the unanimous policy of anti-communists, we, the members of the Government Council, appointed and authorized by the Central Special Committee of the Party, have hereby organized the united Nationalist Government, having already taken our oath of office on the 20th of this month at the Capital. To be entrusted with this grave mission, at this time of critical danger, we are more than ever apprehensive of our incapacity. We, nevertheless, venture to outline the following policies, which will guide our faithful and earnest endeavor in conducting this Government.

Immediate Program

1.—To continue the Northern Punitive Expedition to uproot militarism and to achieve unification has been for long the wish of the people. Throughout the past sixteen years, internal strife has raged without cessation. The national wealth has all along been dissipated in meeting the ravenous needs of war, and our people have never experienced a day of peaceful living. This Government, henceforth, pledges itself to lead the Nationalist Revolutionary Army in the continuation of the Northern Punitive Expedition, to exterminate the remnants of militarism and to achieve unification of the whole country, wiping out once for all the causes hitherto of internecine strife.

2.—To abrogate completely all unequal treaties, restoring to us thereby our national sovereignty and our rightful position in the family of nations. In the past eighty odd years our country has been held in bondage by successive impositions of unequal treaties dictated by the Imperialists. The terror of militarism, the corruption of the mandarin, the bankruptcy of our national finance, the resulting poverty of our people, the loss of our sovereignty, and the injustice suffered by our nationals abroad may all be traced to the unequal treaties. It is for this reason that in his last will our late leader specifically instructed us to effect the abolition of unequal treaties within the shortest possible period, as the chief purpose of the Nationalist Revolution is to secure freedom and equality for China. This Government, therefore, pledges itself to labor unceasingly for the complete abrogation of all unequal treaties, restoring to China her sovereign status.

3.—To preserve the unity of power of the Nationalist Revolution and to remove the obstacle in its way by destroying the influence of the communists in our Party. For the last few years the communists have insinuated themselves within the Kuomintang. While apparently fighting for, and in the name of, the Nationalist Revolution, secretly they plotted to effect a dictatorship of the Communist Party. In stirring up class struggle, they have caused havoc among the agricultural, the industrial, the commercial and the intellectual elements in the country, inciting them to mutual strife, with a view to bringing thereby the gradual disintegration of the Revolutionary forces. More recently still, Yeh Ting and Ho Lung were leading their rebellious hordes, in a desperate dash to border territories; while communists all over the land are watching with vigilance for opportunity of an uprising. This Government hereby pledges itself under oath to strive to the utmost of its resources and ability in exterminating the Communist Party, in order that our people may be made safe permanently from the terror of a Bolshevik regime, and the unity of our Revolutionary force may be preserved unimpaired.

The Maintenance of Discipline

4.—To reconstruct the Revolutionary program and to maintain strict Revolutionary discipline so as to protect the rights of the people and to guarantee peace and order in society and security of the people's livelihood. The poisonous scheme of the communists is to take advantage of the simple-minded peasants and the ignorant riff-raff, teaching them the means of destruction and intrigue and then luring them on with promises of easy and comfortable living, sending them finally to be slaughtered—in short, using them as objects of experiment for their Party. Thus, wherever communism runs rampant, it strips the people of that locality of their security of life and property; their freedom of speech and religion, robbing them even of their very existence. This Government, henceforth, declares itself bound to suppress all such perfidious activities in order to maintain revolutionary discipline and to secure peace and safety for the people. At the same time, the agricultural and industrial groups will receive the educational training of the Revolution under the auspices of this Government, that they may

understand the true meaning of the Three People's Principles and support the Party in its struggle to bring the Revolution to a successful conclusion. It is only by this course that the Three People's Principles can be carried out in accordance with the prescribed program in practice; bringing about ultimately the cherished "millennium of To-Tong."

5.—To carry out the reconstruction plans as outlined by our late leader in his "Chien Kuo Fong Lieh," and "Chien Kuo Ta Kang" and the "Ming Seng" Principle, the most important features of which are the equitable distribution of land, the regulation of capital, and the creation of a national reserve for the purpose of promoting various industries beneficial to the people. All these plans are the antithesis of the confiscatory policy of the Chinese Communist Party; and between them therefore, there is no room for compromise. This Government shall hereafter, follow the plans laid down by our late leader, and, in relation to the conditions of the time, carry out his ideas step by step that, the problem of the people's livelihood, during the stage of political tutelage, may be adequately and properly solved.

Model Government

6.—To correct ourselves of all the chronic corrupt practices of the militarists and the mandarin; and to establish a model government born of the Nationalist Revolution. Much of the maladministration heretofore can be traced to the avarice of our officials. Bribery has been rife; and nepotism has been the order of the day. With militarists and mandarins co-operating with the usurping gentries, the servitors of Imperialism and the denationalized compradores on a grand scheme of bleeding the people, the rapid depletion of national resources and the general poverty among the people naturally ensued. This deplorable condition served as further impetus to the militarists and mandarins in their wantonness, adopting more cruel and oppressive measures, that they might maintain themselves in indolence and supineness. In face of this, healthy and clean administration and all reconstructive efforts were naturally foredoomed; whereas, the purpose of this Government is precisely to set up such reforms. We, therefore, hereby pledge ourselves to establish a clean and efficient administration in contradistinction to its counterpart in the north, that we may face our people without disgrace.

The policies thus briefly outlined, this Government pledges itself faithfully to carry out in turn to the best of its ability and resources and within the shortest period. The other details of administration shall be executed in conformity with the political policy of the Kuomintang and in accordance with the wish of the people, with such care and vigilance so as not to fail in the trust placed upon it by the Central Special Committee.

This Government solemnly hereby promulgates this manifesto and requests the spirit of our late leader and other revolutionary martyrs and the four hundred millions of the Chinese people to be witness thereof.

THE NATIONALIST GOVERNMENT OF THE REPUBLIC OF CHINA.
September 24, 1927.

British Trade and Industry

By Gilbert C. Layton, Assistant Editor of "The Economist"

(SPECIAL TO THE "FAR EASTERN REVIEW")

The Position of the Iron and Steel Trades

IN the latest iron and steel production figures the tendency to which we recently called attention—namely, the declining output—is still apparent. It is thus clear beyond all doubt that the peak of production has, for the present at any rate, been passed. The number of blast furnaces in operation in June, at 175, shows a fall of nine as compared with May. The production of pig-iron dropped from 720,100 tons for May to 650,500 tons in June. The production of steel ingots and castings was also appreciably lower on the month, the June figure being 747,300 tons, against 884,600 tons. The current production is, therefore, substan-

tially below the highest level touched this year and proves that much of that production was, as we feared at the time, due to the overtaking of arrears resulting from the cessation of operations during the coal stoppage. A particularly unhelpful factor at present is that imports of iron and steel, though on the decline, continue on a fairly large scale. A great proportion of the imports come from France and Belgium and in part seem to be stimulated, at least so far as France is concerned, by the uncertainty regarding the monetary situation.

Judging by the reports from the producing centres, the coming months are not viewed with great optimism. It is true that the latest report of the London Iron and Steel Exchange declares that

"the impression prevails that a considerable volume of business is accumulating which must come on the market early in the autumn, both from the home and export markets." But it is almost alone in taking this view and admits that as regards the present "complaints of quiet trade are general." A report from the West Coast is probably more representative: this points out that "Conditions are by no means satisfactory in the hematite pig-iron trade of the West Coast. The run of business from some quarters is small and there are no signs of immediate improvement."

Fuel Research in Britain

It is recognised throughout the world that fuel problems are of the first importance. Everywhere there is a pressing need for supplies of liquid fuels for internal combustion engines, the utilization of low grade fuels and the provision of a suitable and economic domestic fuel. What is the present position of fuel research in this country? The answer is supplied by the report of the Fuel Research Board for 1926. The main lines of attack are the conversion of coal into liquid products by the Bergius process, the production of liquid fuels by the catalytic combination of hydrogen and carbon monoxide and low-temperature carbonization by which it may be possible to attain at once liquid fuel and a solid smokeless fuel for domestic purposes. Investigations have proved, states the Director, that the Bergius process is applicable to British coals and will yield a greater proportion of liquid fuel than any other known process. The catalytic process is described as promising, but up to the present has been submitted only to preliminary investigation.

It would appear, however, that the greatest progress has been made in low-temperature carbonization. Indeed, so great has been the progress made at the Fuel Research Station and elsewhere that arrangements have been made to test a suitable process under strictly commercial conditions and on a commercial scale for a period of several years. The chairman of the leading London gas company has offered his co-operation and provided a site for a 100-ton a day plant. He will erect the plant and run it as continuously as is reasonably practicable for a period of three years provided the Government will pay the original cost of supplying and erecting the new plant necessary on the selected site. This

development is regarded as being of the greatest significance, since it is taken as indicating an interest in the new fuel problems on the part of the gas industry that at one time seemed by no means assured. In fact, the view has been expressed that once the possibilities of the conversion of coal into liquid fuels has been proved it would be best for the fuel supplies of the country if the work of conversion were undertaken by the gas industry.

The British Railway Problem

During recent years the British railway companies have been far from prosperous. In each of the four years since grouping was adopted—1923—they have had to draw upon reserves in order to pay their modest dividends, the total amount taken from reserves in this period being no less than £31,000,000. The figures of income indicate even more clearly the unhappy times through which the railways have passed recently. Thus taking 1923 as 100, the net income of the four chief lines was 91.5 in 1924, 86.4 in 1925 and 49.2 in 1926. The last year was, of course, largely abnormal owing to the long coal stoppage, but it is clear that our railways are not sharing the prosperity of, say, the American railways. What is the explanation? What measure—or measures—will restore prosperity? These are highly controversial questions and are engaging much attention at the present time.

In a pamphlet entitled "*Railways versus Roads*" (published by the "London General Press," London, price one shilling) Mr. E. H. Davenport who is an accomplished writer on economic and financial questions, makes a valuable contribution to this discussion. It is, indeed of the utmost value to all who are interested in the economics of transport. Mr. Davenport's treatment of the problem centres around motor transport, which has gained an enormous vogue while the railways have been languishing. "The American railways," he says, "have accepted motor transport as a 'feeder' for the railway line. They are prospering largely because they are making increasing use of the motor vehicle in providing the American public with an up-to-date and efficient transport service. British railways could do likewise, if they had the same powers as the American railways of running motor transport. These powers must be obtained from Parliament. Allied with motor transport, the home railways can boom: opposed to it, they will go on languishing."

Pacific to Lead the World

By Robert Dollar

AMERICAN shipping is so closely interwoven with foreign trade that the two cannot be separated. There can be no foreign trade without ships and there can be no ships without foreign trade. So that one is linked in with the other.

Every great nation has its merchant marine. And therefore we are in competition with the whole world when we go out with our ships into the foreign trade. I am so used to competition that it does not interest me any more. In fact I have been wondering when I go to the next world whether there won't be competition there.

We had a great deal of trouble in starting our line of round-the-world ships. One trouble was that we could not run a passenger line around the world as we could not sell whiskey. Well, whiskey and I parted company the day I left Scotland when I was 12 years old, because it was on account of whiskey that I was banished from my native land. Maybe it was a good job. American ships, of course, are dry and all others are wet. That is part of the competition.

Every person is interested in foreign trade. If you are not interested directly you are interested indirectly. We cannot get out of it. A good many of the people of the United States think that we should stay at home and not go into foreign trade. I had trouble one time with one of our ships during the war and our Secretary of State said to me after a very heated argument, "If you don't want to get into trouble, stay at home," "I am not going to stay at home," I replied. "All right then," said the Secretary,

"you will have to take your medicine." And I have been taking my medicine ever since.

On one of our ships, I have just looked it up, we carried 160 commodities inwards from the Far East and we carried 78 commodities outward. That gives you an idea of the tremendous scope of foreign trade. Very few have a correct idea of it. For instance, a good many think we could very well get along without foreign trade. How could women get along without silk to make dresses and stockings? If you want to use an automobile, where would you get the rubber tires if we didn't bring that in from foreign countries? Then the great industry of packing that is going on in the vicinity of Chicago and elsewhere. You have got to have tin for packing your goods. Where would you get your tin if we didn't bring it to you? Then there are spices of all kinds and tea and coffee and sugar and innumerable articles that cannot be produced in the United States that we bring in. The same may be said of the goods that we take out, that we take out to foreign countries that they cannot produce. Therefore there is an exchange of commodities. In shipping we cannot get along just by exporting, or rather by carrying cargoes out. We must have return cargoes, or you will pay double the freight on your goods.

There has been a good deal said about the farmers in the United States that they are not interested in foreign trade. We grow more in the United States than we are able to use. If the farmers didn't have foreign trade then part of their produce would rot on the ground. It has been said and never contradicted, that if we had

no foreign trade our factories would be idle one-third of the time. You can see what a calamity that would be.

Now there has been talk about a subsidy. When you go to Washington and talk subsidy the Senators and Congressmen throw a fit, so we mustn't talk subsidy. We must call it something else. We tried to get a subsidy bill through the last session of congress. We didn't get it through, but they gave us something else in the back of the neck. They gave us a 50 per cent. duty on all repairs done in foreign countries. If you are running a ship around the world and the ship comes back into port without having made any repairs abroad, and you looked at the ship and saw the condition it was in you wouldn't want to travel in the ship. So we have to keep repairing our ships all the way around the world and we have to pay the United States Government 50 per cent. duty on all materials used in those repairs. But no other nation has ever thought of such as that.

I ask no financial help from our Government. That may sound like a strange statement to make. But what I do ask is that they put me exactly on the same basis as my competitors of the different nations of the world and I ask that our Government put me exactly on the same basis as they and I ask no help. If I can't operate a ship then, I should be put out of business. If they do that I want to tell you that I am not going out of business either.

Now our ships are running around the world. We call at 22 ports in 11 different nations. Those 11 different nations talk different languages and this will give you some idea of the difficulties that we encounter. Our ships have made something over 60 trips around the world.

I told you that it was considered that we could not run the ships if we would not sell whiskey. Well, it was considered by shipping men of the world utterly impracticable from a financial viewpoint to run ships around the world and never come back. The ordinary shipping has always been to go out to a port, or ports, and then come back again. But this round the world business was a new thing, never tried, but we have made 80 trips and we are still in the ring.

We had great difficulty in securing freight. It looked to be almost impossible. The first six months we ran the ships we ran into the hole \$650,000. It takes a fellow with a little grit to keep on after that kind of a happening. It was considered impracticable and impossible, and everyone said so, and people believed it. When we tried to get freight, people in foreign countries would say, you are one of those American fly-by-nights, you are here to-day and gone to-morrow. Therefore we had to live that down.

We lived it down and we began to get freight. Our ships are now loaded all the way around the world. At the present time we have sailed something over two million miles around and we have sailed from every port on time. You go to San Francisco on a Saturday afternoon at 4.00 o'clock and go down to the wharf and the minute that 4.00 o'clock arrives that ship is moving out starting on a trip around the world. That is one of the things that has given us business, and the prestige that was necessary to make a success.

Now there is one unfortunate thing. We haven't one shipowner in Congress. Not one. In the Parliament of Great Britain in the House of Lords and the House of Commons, they have 72 ship-owners and they see to it that the laws are made so that they are workable. But with us we haven't a shipowner in Congress, but we make up for it by, I think, 170 or 180 lawyers.

Now to succeed in foreign trade, I am giving my life work to it. A good many people say to me, why are you working so hard. You heard about me not playing golf. I get all the golf I want without playing the real golf. It is said I work too hard. I have to work hard, far harder than the young men that I see sitting here. They have plenty of time. I have only got about 20 years left so I have to keep going.

A little change has taken place in Washington. The Shipping Board, headed by Mr. O'Connor and several Congressmen and Senators, have seen the light and they are in favor of an American merchant marine. I might just say to you that I am not in favor of Government ownership of ships. I don't think the Government would ever succeed as well as private owners.

Now it has been said that we could not, American citizens, could not carry troops to foreign countries in the same efficient manner as the Government is doing. I will just give you an illustration. Here about a month ago the Government came to us on a Saturday

afternoon and said, "We have come to commandeer your S. S. President Grant. We want her to carry troops over to the Philippine Islands." That was on a Saturday afternoon. She had half a cargo in her which we had to discharge. We had to fumigate the ship, which, according to our helpful laws took twelve hours. Then we had to go to Los Angeles to take on fuel oil and discharge more cargo. We then went to San Diego, arriving there at 8.00 o'clock on Saturday morning, just a week after the ship was commandeered, and the ship sailed at 5.00 o'clock on Sunday evening with 1,600 troops on board, and we had built bunks and dining facilities and put in kitchen facilities for all those men and she went out to Olongapo and arrived there just 26 days after the Government told us that they needed the ship. Can you beat it?

The trade on the Pacific is increasing by leaps and bounds. The Panama Canal is responsible for part of it, but the great development is because the Pacific Coast of America is facing half of the population of the world, just across the ocean on the other side. Panama exceeded the Suez by two million tons last year; something that none of us ever thought would ever take place. That gives us an idea of the magnitude of the business.

Now I will just say a few words about China. China is misunderstood to a very great extent. And the Chinese, I think, are not on the right track. They are trying now to do away with extra-territoriality and various laws that are not fair to China. But they have not got a central federal government. Now if they had a central federal government, I could almost guarantee them that all those things would be adjusted without any difficulty whatever. But they are trying to adjust those matters, and who are we going to make a bargain with. I mean the American nation. Are we going to deal with the Bolsheviks in Hankow, or is it going to be the Federal Government, that does not exist, in Peking? So they have reached what I would call an impossible point.

We will have no trouble, we have had no trouble, with Chinese themselves. We have had 10 years continual civil war going on in China and we Americans have had no trouble with them at all until this last year. And what was the cause of it. It was because the Russian Bolsheviks got in behind the Chinese and incited them to violence and we have had a whole lot of trouble. I am glad to say, however, that the biggest trouble was in the newspapers here. I said to some reporters the last time I was in China, "Why don't you fellows telegraph home the God's truth?" "Oh, my," they said, "that wouldn't be worth reading."

But now the Bolsheviks, I am glad to say, have been beaten out of Canton and Hongkong, and the same may be said of Shanghai, although the Yangtze river, which is the great commercial center of China, that is still blocked because the Bolsheviks are in control in Hankow. Eliminate the Russian Bolsheviks and our trouble is all over with China.

We have had war, as I say, for 10 years. What has been the result. Commerce has steadily increased. It have been stopped in one place where there was fighting and gone ahead in another place. Just like to-day. To-day our business in Shanghai is cut 70 per cent. with the trouble there. But it has increased 25 per cent. in Hongkong. So one just about offsets the other and we are not feeling it so very much. That shows that the business can go on. If civil war had raged in the United States for ten years, what kind of a country would we have. We would be doing no business at all, but over in China we seem to get along. The trade of Shanghai the last three years increased 30 per cent.

To give you an idea of what is going on over there—this will surprise some people—it surprised me, and I was pretty well posted on China. Take the entrance and clearances of the seaports of the world. New York had 37 million tons of shipping entered and cleared.

Shanghai	..	..	..	..	28 million
Hongkong	..	..	..	..	22 "
London	..	..	..	..	21 "
Liverpool	..	..	..	..	19 "

Can you imagine that the great city of London would be superseded by two seaports in China? That gives you an idea of what can be done over there and what the future is going to be. The great future of China will surprise the world. China is going to be one of the big—I emphasize the word big—nations of the world whenever they can get a strong central government. The greatest development, I claim, in the world's commerce is going to be in China, because they have the natural resources and the people are workers.

Shanghai Prospers

In Spite of Troubled Conditions in China, Trade Booms

NO matter how bad political conditions become in China, the trade of Shanghai continues prosperous. It is increasingly difficult to reconcile the fact that everybody in this Chinese metropolis now wears crape on his enthusiasms, while the Customs returns continue to show such wonderful results. The answer always is: "It was fine last year, but this year is perfect H—!" But when the Customs figures are published, one year, always seems to be better than any previous one. The explanation of course, lies in the vitality of the Chinese people.

Wherever there is order and security, there is trade in China. The Shanghai International Settlement and the immediate hinterland of Shanghai, have not suffered as much as other parts of China and trade thrives. It only proves what has so often been suggested that if any part of China is given six months of peace and order, of good Government and a chance to do business, trade quickly resumes and the Chinese people even forget that they have suffered.

The foreigner who withdraws from this market on the assumption that it is dead, does not understand the possibilities of China. The foreign firm that closes down because business is not what might be expected at this moment, will find that he cannot return, that his competitors have taken his place. The firm that does not advertise, will find that other trade names and other trade marks have taken the place of his established wares. This market is worth fighting for no matter how dark the moment appears to be.

The following interesting extracts are from the Maritime Customs trade report for Shanghai for 1926:—

Year by year it grows increasingly difficult to reconcile Customs statistics with the actual course of trade. Seldom have conditions been so generally unfavorable as during the 12 months under review, and yet the total value of Maritime Customs trade shows by far the largest increase that has ever been recorded in the course of its history. The net value rose to 972 million Haikwan taels, from 755 million in 1925, the previous largest advance in the whole history of Shanghai being 101 million taels in 1920. Unlike that year, which owed its success entirely to a vast import trade, the period under review shows increases for every heading; but a close scrutiny of the figures only reveals one more proof of the truism that statistics by themselves are an unreliable index. Other more hopeful signs of progress, however, are to be found.

By the end of the third quarter it was generally known that importations had been much heavier than in the previous year. The Customs collection for the first seven months was more than six million taels larger than in the corresponding period of 1925, and the increase was almost entirely due to import duty. Poor business during the closing months of the year had little effect on the final result. The total figures amounted to 596½ million taels, an advance of 164 million over 1925 and 113 million over 1924. The advance was so general among all articles of commerce that only two of the main return headings had small declines to record, but the increase was by no means evenly distributed. Cereals, raw cotton and woollen goods accounted for half of it between them. Rice and wheat were the outstanding items, and were imported in large quantities owing to the failure of most native crops. The advance shown by woollen goods was due in the main to a too optimistic view taken by dealers early in the year, which eventually resulted in disaster.

The trade in raw cotton, alone of the three, gives any cause for satisfaction, but here again it is disappointing that, with all the advantages at her disposal, so small a share of the total raw material consumed is supplied by China. Large importations from abroad were required to enable local mills to keep active throughout the year. Other items had large increases to record, but still failed to reach the figures shown in 1924. In most cases, the promise of the opening months, combined with a fear that an extra surtax would shortly be enforced, caused dealers to lay in heavier stocks than the condition of the market would warrant. Many were unwary enough to ignore the uncertainties of exchange, and suffered

severe loss from its sudden drop in the autumn. Experience of past occasions did not serve to prevent speculation on a large scale, and it is to this more than to any other reason that the general increase in importations must be attributed. Few branches of trade were able to report an increased volume of business during the year, and fewer still to show a satisfactory profit on their transactions.

A large advance in figures is also to be found under export headings. Total exports of local origin increased by 87 million taels over the previous year, two-thirds being contributed by shipments of local produce to other ports in China. Cotton yarn was by far the most prominent item, and the success in this trade was chiefly due to the grave industrial trouble and consequent reduced output of 1925. Exports of cigarettes and flour to other ports also recorded a large increase. Of the trade with foreign countries, silk was the only article to show any considerable measure of success. In nearly every other class of goods difficulties of transportation and constant irregular taxation made the cost of obtaining supplies so excessive that merchants were often unable to fulfil their contracts without loss. At the same time, competition from other countries was keener even than usual. It is said that exporters have not been faced with such unfavorable conditions for many years. This state of affairs is not revealed by the Customs returns, chiefly because the actual quantities of cargo exported were much the same as formerly. In some cases, however, notably in egg products, prices have risen to such a height that a considerable increase was recorded in the value although the quantity was less.

A revival of business took place from the end of September, when the fall in exchange was sufficient to offset the high cost of native produce. Even at its worst, the position of exporters was never so precarious as that of the import firms, for the latter were not only faced with the same difficulties of transport and taxation, but were further handicapped by uncertainty about the future and the constant fear of their stocks in the interior being looted. Moreover, the low rate of exchange worked directly against them instead of in their favor. The increase in the figures for native imports and re-exports was largely due to the silk trade from Canton. Until the middle of October the boycott in the South prevented Cantonese merchants from making use of the usual route *via* Hongkong, and much silk was brought to Shanghai for disposal. Tea, raw cotton and cotton yarn were other articles which showed a considerable advance, but as the increase in imports and re-exports was about the same, the net value of the trade of the port was hardly affected.

An Encouraging Note

It has already been seen that the export of locally-manufactured goods, particularly cotton yarn, was far greater than in the previous year. The good results shown by Shanghai industrial concerns were the most encouraging feature of the whole period. Cotton and flour mills and silk filatures were the most successful, the two former enjoying brisk trade with other ports in China and the latter with foreign countries. All these enterprises, however, were fortunate in having certain unusual favorable circumstances, without which their year's working would have been very different. Even as it was the net profits were by no means proportionate to the increase in output. Cotton mills, as has already been remarked, benefited from the general shortage of supplies during the previous year; plentiful stocks of raw material enabled them to enjoy the increased demand while it lasted, and the earlier months were accordingly very successful but towards the end of the year immediate requirements of up-country markets were satisfied, and buyers were not attracted even by the abnormally low level of prices which was offered.

Failure of crops in many parts of the country and the general high cost of rice proved very advantageous to flour mills. Demand was particularly strong from the North, where great difficulty was

experienced in obtaining sufficient supplies of wheat. Silk filatures owed their success entirely to the fall in exchange. The opening months of the year were not very promising, and it was not until September, when the sudden drop in silver began, that large orders were received from abroad. Results of the year's working would have been far better for all industrial enterprises if it had not been for one grave difficulty with which they had to contend. This was the growing prevalence of strikes. Workers sometimes seemed disposed to listen to agitators and declare strikes over questions that could probably have been settled by arbitration. In some cases, indeed, they actually stopped work before any demands had been made; but, on the other hand, many real hardships had to be faced by the average laborer during the year, chief of which were the high cost of rice and depreciated copper currency.

Unlike the two previous years, Shanghai during 1926 did not suffer from warfare in her immediate neighborhood. The period, indeed, may be regarded as one of unusual quiet, which stands out in welcome contrast to the disturbed conditions prevailing in nearly every other part of China, but, though Shanghai itself enjoyed peace, its trade was naturally very seriously affected, as market after market in the interior became closed to business, and communications were restored with one district only for those with another to be severed. The position at the opening of the new year was not reassuring. There was every reason to expect further fighting in the North, and all movement of goods was difficult; on the railways, generally impossible. In the Upper Yangtze districts conditions were still unsettled, while the boycott continued as a drag on trade in the South.

It is not surprising, therefore, that during the few weeks which remained before the Chinese New Year business continued at a low ebb and merchants preferred to wait for some decided trend in affairs for the better. Dislocation of railway traffic, which is always the inevitable result of military operations, kept quantities of native produce tied up at various places in the interior. Even shipping was not always able to proceed to Tientsin unmolested, and more than one occasion traffic on the Taku Bar was temporarily closed. Early in April the situation cleared. Trade, which up to then had been conducted almost exclusively with the central provinces, was rapidly renewed with the North. As the railways were gradually released from military control, they began to restore more regular services, but the deplorable state of rolling-stock and tracks and continued interference from the soldiers often prevented them from returning to normal. On many lines the penalty for the long period of dislocation had to be faced in the shape of increased passenger and traffic rates. Despite the many and sundry difficulties, the Shanghai-Nanking Railway, in July, was said to be handling the heaviest traffic in its history.

Shanghai in the meantime prospered from the interval of security and peace. Strikes, however, continued to break out with depressing frequency, in spite of the firm attitude towards agitators taken by the local authorities.

Large Silver Reserve

Throughout the uncertain period anything in the nature of a financial panic was prevented chiefly by the large reserves of silver kept in Shanghai. These were far greater than in previous years, and in September were estimated to be Shanghai Tls. 30,000,000 more than in 1925. A new factor arose, however, albeit one not altogether unforeseen, to add still further to the difficulties of trade. The silver exchange had tended to weaken since the beginning of July. In September, rates fell rapidly, and the lowest price of silver was reached on October 19, after a drop of 4d. in less than five weeks. The foreign cross-rates followed the price of silver, little improvement being seen for the remainder of the year. This sudden fall in exchange would have proved as advantageous to the export market as it was disastrous to importers had it not been for the great difficulty experienced in obtaining supplies. Only a few industries, notably silk spinning, were able to benefit from the increased prices that the low exchange would allow them to command.

At the close of the year, prospects seemed worse than at any time during the period under review but it is hoped that peace and prosperity will succeed disappointment and gloom. Up-country markets are known to hold very small stocks, and, granted that normal conditions return, they will absorb what Shanghai has to offer.

The Customs revenue of Shanghai, excluding famine relief surtax, increased by Hk. Tls. 6,682,443 over 1925, an advance of Hk. Tls. 5,158,000 over the previous record collection. The year, indeed, may be said to have broken all previous records, for not only was this increase the largest ever made in the history of Shanghai but the revenue, with its Hk. Tls. 32,700,000, took a larger percentage of the total collection for China. Shanghai's share has risen considerably since the beginning of the century, when it was about 31 per cent. From 1920 onwards, it has kept an average of 37.6 per cent., but this year it amounted to no less than 40.9 per cent. Converting the total revenue into sterling at the Customs monthly exchange rates makes the increase comparatively insignificant—£5,235,000, as against £5,055,000 in 1924. This is due to the decline in value of silver, the average rates for the two years being 6.32 and 5.45, respectively. The sudden fall in exchange during the closing months of 1926, however, had little effect on the revenue. The collections for November and December, when the Customs rates of exchange were at their highest, were smaller than for any other month except February.

The success of the year was due to brisk import trade during the earlier months, and by the end of July the gain in revenue had already amounted to Hk. Tls. 6,300,000 over the corresponding period of 1925. Of the total increase for the year, five-sixths were contributed by import duty, and larger importations were general among the main articles of commerce.

Shipping's Recovery

Shanghai's shipping recovered from its set-back of the previous year and established a new record, both in tonnage and number of vessels entered and cleared. The period, however, was not perhaps so successful as the figures would seem to indicate. Although Shanghai was happily spared any repetition of the grave labor trouble which had embarrassed shipping during 1925, fighting and political disturbances throughout the country caused more hindrance than in previous years. The important trade centers of Tientsin and Hankow were partially closed at one time or another by warfare, while the southern ports never fully recovered from the peculiar position that had already existed there for six months at the opening of the year. Furthermore, throughout the period the dislocated communications of the interior continued to prevent large quantities of produce from reaching the seaboard. Export cargo in consequence was seldom sufficient for the number of vessels offering. Matters improved towards the end of September, when the fall in exchange gave exporters some much-needed assistance, but the most satisfactory business of the year was due to foreign goods, which were imported in unusual quantities, more perhaps than the prevailing conditions would seem to warrant.

Of the more concrete kind of difficulties with which shipping was beset, piracy was the most serious. This menace has been steadily growing for some years, but during the past 12 months it reached a pitch quite unprecedented in Chinese waters. Apart from attacks on junks and launches, that have often been reported in the neighborhood, no fewer than five Shanghai coastal steamers on a regular service were pirated, and in only one instance—the now famous one of the steamer *Sunning*—was the attempt not completely successful.

On turning to the statistics for the year, there is much of interest to be found. The total figures—33,323,429 tons—show an advance of 3,038,574 tons over the previous year, or a million more than in 1924, and place Shanghai in the list of the first six or seven principal ports of the world. Of this increase, the British flag contributes the largest share, with a rise of 1,650,000 tons, though even this figure is not sufficient to recover the loss it sustained in 1925. The difference that is still outstanding, some 800,000 tons, when compared with 1924, is due to decreased coast shipping. The Chinese flag experienced a drop of 172,000 tons in its total figures for coast shipping and the still more serious one of 406,000 tons for river shipping when compared with the previous year. This was entirely due to civil warfare in the Yangtze Valley early in September; commandeering of native craft became so universal that Chinese steamers would only run as far as Kiukiang, and later were forced to close down their Yangtze service. The China Merchants Steam Navigation Co. had 13 out of 31 steamers commandeered, including seven of their river fleet, and eventually, on December 5, in view of the heavy losses they were incurring, decided to

suspend business altogether. No more of their vessels sailed during the rest of the year.

The history of Japan's shipping is one of steady increase. Her total tonnage has advanced each year (with the exception of a small set-back during the months following the earthquake), from 6.15 million tons in 1920 to 9.38 tons for the year under review. This is almost entirely due to her ocean shipping engaged in foreign trade, the actual figures in millions of tons for the five years being:—1922, 4.37 tons; 1923, 4.87 tons; 1924, 5.18 tons; 1925, 5.73 tons; 1926, 6.44 tons; whereas the difference between the combined tonnage for Japanese coast and river shipping in 1926 and in 1922 does not amount to 300,000 tons. A very adequate proof is thus provided, not only that Japan's ever-increasing flow of trade with China is being carried by vessels of her own flag, but also that her shipping is offering stern competition for the trade of other countries.

Comparing the figures for 1920 and 1926, it is seen that countries with smaller shipping interests are gradually taking a larger share. No fewer than four flags, namely the Dutch, French, German and Norwegian, with less than 200,000 tons to their credit in 1920, have recorded an increase of more than 600,000 tons since that time.

Piece Goods Slump

In a summary of particular trades, the report states that the year's trade in piece goods proved a disappointment to all those concerned in it, the more so as the opening months had almost encouraged optimism. Little sign of improvement was to be seen before the close of 1925. Continued fighting in the North had put an end to trade in that quarter, and there was no life in the Yangtze and Szechuan markets. With the beginning of the new year there appeared a change for the better, but, unfortunately, the promise was only partially fulfilled.

The Customs statistics for the total importations of cotton piece goods show an increase of 13½ million Haikwan taels over 1925, but a decrease of Hk. Tls. 1,800,000 when compared with the figures for 1924. Most classes of piece goods made good the heavy loss they sustained in 1925. English white shirtings, however, still have a great deal of ground to recover, in spite of an advance of Hk. Tls. 657,000 during the year under review, the total value of importations amounting only to Hk. Tls. 13,115,000, as against Hk. Tls. 19,059,000 two years before. The heaviest increases are to be seen under white, dyed and printed satteen drills, which, together total more than 3½ million taels. Venetians, cambrics, warp-faced satteens, and sundry piece goods not recorded under any special heading all have considerable rises to record.

Most people are well aware of the steady growth of Japanese trade, but it may not be so generally known how rapid this advance has been. The special advantages which Japanese manufacturers and merchants enjoy are obvious. Cheapness of labor, proximity to China, and greater intimacy with the customs of the people with whom they deal are all factors which enable them to offer very formidable competition. To these natural advantages must be added comparative freedom from the grave industrial unrest which hampered their main rival during the year under review. Japan was thus able to benefit to the full from the low cost of raw cotton. But there are other reasons as well to account for their success. Not least of these is the painstaking energy shown by Japanese manufacturers in adapting their products to the needs of the consumers. While they continue to improve the quality of their goods, fresh channels are constantly explored, and kinds of cloth, which a few years ago they would not have attempted to make, are now offered on the market at very reasonable prices. Japanese piece goods do not appear at the auctions. The method of the merchants is to do without dealers and middlemen as far as possible and to make direct sales. The most noticeable increase was in printed piece goods, which were nearly double the previous year's figures—Hk. Tls. 9,738,000, as against Hk. Tls. 5,052,000. Japan's share of the total importations of this class of goods rose from 62 per cent. in 1925 to more than 80 per cent. The most prominent items were printed satteen drills, with an increase of Hk. Tls. 1,838,000; printed shirtings, Hk. Tls. 1,466,000; and printed jeans, Hk. Tls. 775,000. The figures for Japanese white or dyed piece goods rose by Hk. Tls. 5,149,000, when compared with 1925, but the percentage—44 per cent.—remained the same for both years. Once again the chief item was satteen drills, with a rise of Hk. Tls. 1,718,000.

A Timber Boom

The timber trade was one of the most successful of the year. After a salutary lesson in 1925, minor dealers refrained from large speculative purchases, and business was conducted on a sounder basis. The total importations of timber increased by Hk. Tls. 4,991,000 in value, or nearly 100 per cent. This advance, it is true, was not quite sufficient to make up for the decline of the previous year, but, unlike in 1924, when quantities of lumber intended for Japanese reconstructive purposes were dumped on Shanghai, the total figures for the year more nearly represented the true requirements of the market. The most important item was ordinary sawn softwood, which showed an increase of 66,776,000 superficial ft., amounting to Hk. Tls. 3,142,000 in value. Oregon pine contributed by far the largest share. At the opening of the year stocks were somewhat low, and, on the brisk demand, prices advanced from about Tls. 48 per 1,000 ft. to between Tls. 50 and Tls. 52. There they remained until the late spring, when they began to fall rather heavily. A change for the better occurred in October, owing to the fall in silver, and prices rose to as high as Tls. 58. Consumption fell off slightly during the last quarter on account of disturbed political conditions and the approach of the new year settlement. Business closed in 1926 with rates steady at about Tls. 54. There is an increasing demand in Shanghai for Japanese pine, and this variety of timber is likely to take the place of Foochow poles as the main competitor of American softwood.

A further notable advance was made in the motor-car trade during the year. One of the most interesting features was the increased demand for trucks and charabancs, which are coming into common use in China, not only for commercial purposes, but also for the transport of troops and munitions. Importations into Shanghai rose from Hk. Tls. 114,000 to Hk. Tls. 306,000 in value.

Harbor Improvement

An appendix dealing with harbor work gives full particulars of the rearrangement of moorings, stating it was expected the whole scheme would be completed by the end of June, 1927, and it is hoped that the accommodation for shipping in the harbor, thus provided, will then be adequate to meet requirements for some years to come. Any additional accommodation required in the future will have to be formed by extending the line of moorings in the Lower Section northward and developing the harbor at its southern end. A suggestion has already been submitted that that southern limit of the harbor be extended to the Chamchiatang Creek. The benefit to be derived from the new arrangement of buoys in the harbor is already apparent. The channel between the "A" and "B" buoys and the Pootung shore in the Lower Section is 800 feet wide, which provides a fine, clear fairway for shipping under way. At the upper end of these buoys the channel between the "C" class buoys and the Pootung shore in the eleventh and tenth sections is 1,000 feet wide, providing not only a fine, clear fairway, but also a sheet of water 9,000 feet in length, whereon the largest vessels entering the harbor will be able to swing if necessary. Then follows another channel of 800 feet wide between the "A" class buoys and the Pootung shore in the tenth section, which terminates in a large swinging basin 3,000 feet in length. This basin stretches from the Shanghai to the Pootung shore, and will be kept clear of anchored shipping, other than those using an anchor for the purpose of swinging. In it two vessels of the largest class entering the port will be able to swing at one and the same time in safety. All this completed—and it is hoped that it will be completed in the very near future—large and small vessels should be able to move and manoeuvre on the waters of the harbor with vastly greater ease and safety than they have been able to do in the past.

When the rearrangement of the moorings scheme was considered and adopted toward the end of 1925 and early in 1926, it was considered as a foregone conclusion that the development of Upper Gough Island as a depot for the storage of gasoline and other highly inflammable liquids, and the frontage thereof as wharfage ground for the accommodation of gasoline-laden vessels, would be nearing completion by the time the head-and-stern moorings were laid. Obstruction of an unforeseen nature evolved, however, and the development of Gough Island as a gasoline depot was delayed. This, together with the fact that the rearrangement of the moorings scheme developed more rapidly than it was expected to do, has somewhat upset the general arrangement for accommodation of gasoline-laden vessels visiting the port.

How China Loses Her Friends

Mr. Silas Strawn Speaks in Manchester

AS has so often been repeated, Mr. Silas Strawn came to China a friend of this country. He probably hoped to do for China as much as a fellow-Chicagoan did for Germany. He undoubtedly took a lenient view toward China's shortcomings and expressed on every occasion a hope to be able to be of service to the Chinese people. In his Manchester speech, he described the difficulties which beset him and the members of the Tariff Commission—a body which sought to give something beneficial to China without any strings tied to their proposals. Mr. Strawn said:

Chaos in China

One of the difficulties of dealing with China he could illustrate by describing what happened to him and Sir Kenneth Stewart when they went to Peking with the Tariff Commission. As one warring section or another triumphed the Chinese members of the Commission would disappear to take refuge at some foreign concession, and presently he and Sir Kenneth Stewart, who had gone thousands of miles to attend a conference with the Chinese, were left with three innocuous people with backbones about as strong as wet macaroni. (Laughter.) The Chinese representatives were cordial, but they could do nothing. They could make no treaty because there was no Government. There was no semblance of orderly government in China to-day. Sir Kenneth Stewart and he agreed upon a fair tariff scale that was satisfactory to the Chinese experts, but after a time the distinguished chairman of the Commission ran off to a foreign concession and had not been to Peking since. (Laughter.)

No one could go to China without sympathizing with the patient, long suffering Chinese coolie who was being continuously enslaved by the war lords and the politicians. Eliminate the war lords and the politicians and you would eliminate all anti-foreign feeling. There was not one Chinaman in a hundred who knew anything about foreign imperialism, tariff autonomy, unequal trading, or extraterritoriality, or any of the cries the politicians used to camouflage the iniquities they perpetrate upon the coolie.

The Chinese needed foreigners a great deal more than foreigners needed China. China was a country of greater area than the United States, but it had only 7,000 miles of railway compared with 256,000 in the States, and 93 per cent. of the people could not read or write. It was difficult to reach the people or to bring order out of chaos. The people were the slaves of the dominant war lords, and they continued in slavery without knowing what it was all about.

Forcible Intervention Impossible

The natural tendency was to go in and spank the Chinese, but that would be like spanking a feather bed. (Laughter.) It would have no effect because there were too many of them. It would cost a great deal more than there was to be got out of it. If the powers went in together the result would be to solidify the Chinese, and that would mean interminable guerilla warfare. In no way, as he saw the situation could they go into China by force. But they could not permit irresponsible soldiers and war lords to destroy the lives and property of their citizens in the treaty ports, where most of those citizens and most of the property was situated.

It was unfortunate that many missionaries had gone into the interior. Many of the missionaries had done splendid work in China but some had been indiscreet, for they had talked to the Chinese about unequal treaties, tariff autonomy, and extraterritoriality under the impression that it would help them in their work. The Chinese now said to these missionaries: "You have been talking about these things and there has been

no remedy. You must be the advance guard of imperialism. Get out of it."

On the question of unequal treaties, Mr. Strawn said the Anglo-Saxon view and the view of Europeans and of the Japanese was that a treaty held good until it was changed. A contract was good until it was changed. They were ready, willing, and anxious to remedy any unequal treaty with China. Personally he did not think the treaties were unequal, for they were wanted at the time, and were entered into in good faith. But it was the duty of Sir Kenneth Stewart, himself, and the rest of them to change some of those treaties. They were willing to give the Chinese all the tariffs that traffic would bear, and they agreed upon a schedule, but when the time came to do business there was nobody there—(laughter)—so that the responsibility for unequal treaties lay really upon the Chinese themselves.

The Nationalist Movement

Alluding to what was called the Nationalist movement in China, Mr. Strawn said the difficulty was that those who belonged to this movement did not understand nationalism as we understood it. They did not understand it in the sense that sent thousands of young fellows to France to die. By them nationalism was interpreted to mean that a man's first duty was to his family. The family unit system was the basic difficulty in dealing with China. Whenever a Chinaman got into office he thought it his first duty to rob the Government to benefit his family. (Laughter.) For a time the Cantonese movement did well, but then the people in the movement began to quarrel among themselves. Whenever you got the Chinese up to a culminating point at which you conceived it is possible to do something and make an agreement, the Chinese must have a row among themselves because of a fear that one or another would get hold of the National Treasury. (Laughter.) Everything was done to make unequal treaties equal. That was the attitude of the United States and Great Britain, if it had been possible to do anything.

He saw no sign of imperialism in China. All attempts at the surrender of extraterritorial rights were made abortive by the failure of the efforts of capable Chinese to frame a system of laws and a judicial system. At the time he and his colleagues were sitting in Peking trying to draft a report on the surrender of extraterritorial rights the war lords were indiscriminately shooting the judicial officials and any newspaper editors who criticized them. There were highly capable and sincere men in China as judges, but they could do nothing with the swords of the war lords hanging over them.

The situation was very difficult for those who had business to do in China, but he could only urge patience. No one could predict when order would be restored, but he was afraid a long time must elapse before that happened. The Government was doing all it could to protect their interests; it was policing the treaty ports, and would no doubt do so until order was restored. If they could get rid of the war lords, the politicians, and the half-baked students, there would be no animosity against the foreigners. There were students who engaged with the Soviet to raise hell, but he did not think they need worry about Bolshevism in China, because one never found a Chinaman ready to share his bowl of rice with another Chinaman.

He did not think there was any difference between the United States and Great Britain on the subject of China. Both took the same view, and were going to take joint measures of protection. Of course, he spoke as an individual, and not as an official. His country might not accept all he had said, but he spoke of China as he understood it after eleven months of intensive study.

China As A Market for Machinery

By Walter Buchler*

THE unsettled state of China has greatly affected the demand for machinery from that market, but the pessimism reflected in the cabled and written reports of the daily Press, which gives more than ample prominence to political and other topical news, while saying little—in fact, nothing—regarding commerce in China, should not be taken too seriously. Although the difficulties of transportation caused by military operations, and the hesitation on the part of Chinese to buy new machinery owing to the uncertainty of the political situation giving rise to labor troubles, have caused a decrease in machinery imports during recent years, these still represent four times the average value for pre-war years. The figures in Table I will convey an idea of the amount China has been buying.

TABLE I.

Machinery	1923 £	1924 £	1925 £
Agricultural	53,241	51,328	28,225
For electrical power stations	255,345	148,056	150,176
Printing, book-binding, and paper-cutting...	104,328	189,282	114,010
Propelling	262,042	359,925	335,962
Pump and pumping... ..	70,761	70,238	112,522
For the textile industry	2,149,367	1,010,282	596,194
Machine tools... ..	37,786	83,403	38,752
Total	2,942,870	1,912,515	1,375,841

The Chinese are, on the whole, a poor people, but they are very anxious to employ foreign machinery for agricultural as well as for industrial purposes. "Wars" have always existed in that Empire, but as they are conducted according to Oriental ideas of waging warfare (intrigue, propaganda, compromises, and the winning-over of the other side by hard cash), they do not preclude trade except in those areas directly in the sphere of military operations. Railways usually suffer most from such troubles, and the demand for locomotives and rolling-stock in general consequently greatly diminishes; this was the case especially in 1925, when there was an almost complete absence of the orders for railway material and machine shop supplies, usually placed by the Chinese Government.

These unfavorable conditions for business continued last year, but in spite of lack of funds and absence of normal organization, substantial orders were placed for rails, locomotives, and rolling-stock in general. These emanated mostly from Manchuria, which is the most progressive and among the richest provinces of China, and, what is as important, the least disturbed. China's railways have been developed mainly through a spirit of obtaining concessions, combined with politics and finance, the desire of Chinese officials to make fortunes on a get-rich-quick basis contributing a considerable impulse. The scope for railways and rolling-stock are almost unlimited in China, and the field has hardly been touched as yet. In the writer's opinion, most of the really sound business, both for railway materials and the loans enabling these to be bought, will pass in future through private, and the usual business, channels, the contracts being obtained in open competition. The same may be said in respect of the mining possibilities which China presents, the exploitation of which only awaits better means of transportation, organization of railways, and a better understanding with the Chinese.

The use of electricity is steadily spreading throughout China, and power is being more and more utilized for industrial purposes. The demand for electrical machinery and plant for generating electricity was fair last year, although irregular in previous years. In this connection Tables II and III, on page 30, of China's imports of machinery and materials should convince manufacturers and exporters of the remarkable trade vitality that country continues to show in spite of civil war and labor troubles.

Among the large number of articles for which there is a demand in China—and which may be classed as electrical machinery—transformers, motors, meters, oil engines and suction gas plants are prominent. Competition is keen, and Continental countries are making considerable headway, particularly Switzerland in electrical machinery and materials.

The number of cotton mills in China is gradually increasing, and the fact that the Japanese find that field a more profitable one

than is furnished by their own country is evidenced by the large number of mills they have established and the policy they are pursuing of buying up or obtaining control of Chinese cotton mills when in financial difficulties through mismanagement. This policy is helping Japan to secure a greater share of China's requirements in textile machinery. But the machinery she supplies does not compare in quality with Western manufacturers, although it is attractive from being considerably cheaper. There is an increasing demand for knitting machinery in China for the manufacture of cheap hosiery to supply the country's own needs as well as for export markets in the Far East. Many mills are installing weaving plants besides enlarging their capacity by means of additional machinery. There are about 130 cotton mills in China, of which 75 belong to Chinese and 55 to foreigners. The total number of spindles and looms operating are 2,500,000 and 26,000 respectively.

TABLE II.

Machinery for Electric Power Stations	1923			Electrical Materials.		
	1923	1924	1925	1923	1924	1925
Imports from—	£	£	£	£	£	£
Hongkong... ..	14,325	7,747	5,795	106,44	118,637	77,250
Great Britain	122,858	41,113	60,462	218,791	226,621	209,811
Germany	67,366	20,934	38,808	366,471	398,010	243,846
France	13,756	1,231	—	—	—	—
Italy	19,396	17,232	1,348	—	—	—
Japan	6,611	971	18,372	436,648	397,988	414,209
U. S. A.	18,733	38,092	19,849	231,350	222,813	148,993
Total incl. other nations	£265,345	152,484	151,380	1,418,084	1,434,118	1,205,763

TABLE III.

Imports into China of—	1923	1924	1925
Locomotives and tenders	£ 204,700	£ 195,000	£ 156,000
Motor-cars	298,000 (1,286)	455,000 (2,025)	667,000 (3,169)
Motor-cycles	18,700 (387)	17,000 (434)	14,700 (362)
Railway carriages and wagons (including tram-cars)	137,000	394,000	188,000
Bicycles, etc.	58,100 (10,795)	108,700 (22,504)	48,100 (11,270)
Vehicles (other kinds)	237,000	290,000	400,000

Figures in brackets give number.

One of the most progressive industries in China is the flour milling industry, which is well organized and equipped with the most modern foreign machinery. There are about 100 mills of importance in China, and with the increasing consumption of flour in the Far East, more mills are likely to be erected and more machinery required. The Americans have shown much enterprises in securing contracts for flour-milling machinery, and most of the business has gone to them. British manufacturers and exporters would do well to pay more attention to the requirements of flour mills in China, especially those in or near the Treaty Ports, such as round Shanghai.

Considerable progress has been made in sugar production, and refining, in Manchuria and in the South of China. With the large areas China has been suitable for cane and beet cultivation, there is no reason why she should not refine more of her own sugar. At present, there are about 17 refineries of any magnitude in China, and large quantities of refined sugar are imported. More and more sugar is being consumed in the country, and as conditions become more stable, more sugar mills are certain to be erected. So far, the Japanese have shown the most enterprise in this particular industry (in South Manchuria).

The number of cigarette and tobacco factories are increasing every year. This refers particularly to those started by Chinese. Chinese workshops have turned out some cigarette machinery, copies of American models at less than half the cost, but the quality in the matter of accuracy, durability, etc., leaves much to be desired and were it not due to the high value of money in China, there would be fewer attempts to copy foreign machinery, while turning out lower-grade material. The low cost of cigarettes in China creates an enormous consumption, and foreign manufacturers of cigarette machinery are likely to find China a profitable field.

Primitive methods in many branches of China's industries are still practiced. Of this, the vegetable oil industry is typical.

* Engineering.

The Chinese have not yet sufficient knowledge to realize that the latest crushing machinery, etc., will enable them to extract the maximum of oil from the material. Even in some foreign oil mills in China, more oil could be extracted if better machinery were employed. Foreign manufacturers will find that, by educating customers—or rather prospective customers—to the use of better machinery, they themselves will also benefit.

Education is making steady headway in the country, and modern methods of agriculture are slowly being introduced. The Chinese farmer still uses ancient implements, due more to ignorance than to lack of appreciation of foreign methods. The Chinese Government itself is trying to educate the people to better ways, and foreign missionaries and returned Chinese students who have studied abroad, are gradually educating agriculturalists (the majority of the 500,000,000 population are engaged in agriculture) up to more modern ideas. The employment of foreign machinery is, therefore, sure to increase within comparatively few years.

Tramways as a means of cheap and quick local transport, are becoming more and more appreciated, and where in use (as in Shanghai, Peking, Dairen, and Harbin) have proved profitable enterprises. The country has very many large cities at present without any other means of locomotion than the ricscha, wheelbarrow, and Peking cart. The demand for motorcars shows also an increase, as more roads are being constructed every year in many parts of China, particularly in the north.

There are, approximately, 60 shipbuilding and engineering works in China, of which 10 undertake the construction of ships and large repairs on a modern basis and scale. This has made China a good market for such accessories as boilers, turbines, etc., imports for three years having been as in Table IV.

TABLE IV.

					1925 £	1924 £	1923 £
Great Britain	...	...	...	...	156,000	191,000	130,270
U. S. A.	...	...	...	...	51,714	49,700	57,000
Germany	...	...	...	...	48,100	30,050	39,950
Belgium	...	...	...	...	49,200	8,560	3,730
Japan	...	...	...	...	16,270	16,000	19,000
Sweden	...	...	...	...	11,450	51,700	10,250
Italy	...	...	...	...	2,220	9,000	5,000
Others	...	...	...	...	5,046	9,990	8,400
Total	...	...	...	...	340,000	367,000	273,000

There is scope for further foreign enterprise in such machinery, as elevator and elevator accessories, owing to the policy of erecting large buildings in such Treaty Ports as Shanghai, Tientsin, Dairen, Hankow, and a few other towns. Hand labor is still largely used in sawing wood, but the Chinese are putting up an increasing number of sawmills; the Japanese operate about 10 large sawmills in Manchuria alone. Altogether there are about 100 sawmills in China of any considerable size, besides many small ones.

Sufficient has probably been said to show what an excellent opening the China market presents to enterprising manufacturers and exporters. It is, however, essential for firms to have an idea of how business is carried on in the country, as methods of trading differ considerably from those in the West. There are two ways of working the China market: either to sell through a foreign importer established in one of the Treaty Ports (preferably Shanghai, which is the center of China's import and export trade), or to open one's own branch or branches and sell direct to Chinese dealers. Exporters who do not specialise in any particular line, but ship to different markets a variety of articles, would be well advised to

appoint some reliable firm in Shanghai to represent their interests. Those who specialise in machinery and intend to concentrate on the China market should send out their own representative to make a careful study of conditions, and at the same time to open a branch, establishing agencies in such important trading centers as Tientsin, Hankow, Dairen, Harbin, and Hongkong. The policy on the part of Chinese of buying from stock to cover their monthly, in fact daily requirements, is extending, owing to the uncertainties of exchange and the general industrial outlook. Foreign engineering firms cater to the trade from stock in many lines, in order to secure orders. This policy should certainly be followed for the common articles of commerce, as otherwise the business will go elsewhere. But before shipping out costly machinery for large industrial undertakings such as cigarette and flour manufacture, requirements should be carefully studied and met, even if they entail extra trouble and expense. In starting one's own selling organization, the most important matter is to obtain a reliable and active comprador, who acts as a sort of go-between. The comprador receives a salary to cover his staff's (Chinese) wages, and a small commission on all orders received, the amount of commission depending upon the nature of the article. In return, it is for him to bring in the business, and he guarantees payment up to 25 per cent. of the amount in case a dealer defaults or does not take delivery of the goods ordered. Shroffs (salesmen and collectors) constitute the most important section of the comprador's staff, and the remainder will be the usual clerical assistance for accounts, etc. When attempting to open up trade, it is absolutely necessary to make a first-class display in a prominent part of the business center of the town, no matter what the expense may be. The Chinese attach considerable importance, and often judge the standing of a firm by its showrooms and offices and general report; they do not make inquiries of banks, or believe much in general references. Firms sending out their own representative should insist that he set about acquiring a knowledge of Chinese (Mandarin), as this is an incalculable asset, in fact is becoming more and more a necessity in commercial intercourse with the Chinese, whose high reputation for straight dealing is fully justified. With them price comes first, but sentiment also plays an important part in one's dealings with them. Terms of payment vary according to the class of machinery sold: they may be cash on delivery—a policy usually followed by British and American firms—or part payment on delivery, and the balance within a stipulated time; in some cases, deposits will be asked with order and the balance against delivery. Japanese, anxious to secure the orders, sometimes grant short terms of credit, and German houses have been known to adopt a similar policy. Advertising and general propaganda should be extensively undertaken, and catalogs got up well in English and Chinese. Brands should be given in the case of articles sold on a large scale, as the Chinese buy on the reputation of a "chop" (brand), and are often prepared to pay more for an article with an established "chop" than for one just as good, but not so well known.

While wars may constitute a handicap to the free development of business, the Chinese, being a born trader, always manages to trade as long as there is a profit to be made, even if it means getting merchandise "through the lines at an extra copper." Last year was a very disturbed period for China, with labor, political and military troubles, but despite these disturbed conditions, the country purchased larger quantities of textile machinery than in 1925. Great Britain shipped to that market, in the first eleven months of 1925, 1,338 tons valued at £177,412, and in the same period in 1926, 856 tons, valued at £227,650.

Book Review

Link-Belt Booklet

Of practical use to Engineers, plant operators, and all who use Belt Conveyor equipment is the New 144 page Belt Conveyor Data Book No. 615, just off the press of the Link-Belt Company.

As one glances through its pages and observes the fund of engineering data therein contained, the thought arises that such a combined catalogue and data book could only have been evolved out of many years of research and practical experience in the design, construction, and operation of belt conveyors handling all sorts of materials under a variety of operating conditions.

This book contains new formulae—new data—never published before; and it, undoubtedly, will prove to be a valuable hand book on Belt Conveyors. But, aside from being an engineering hand book, it also is a catalogue that shows the progress that has been made in the art of conveying materials rapidly, continuously, and economically. There are many pictures of conveyor installations, as well as of the idlers, return rolls, and other parts, to show their detailed construction. The most advanced designs of belt conveyor construction are covered—such as the Link-Belt Anti-Friction Idler, equipped with Timken roller thrust bearings. This anti-friction idler is made at the Ewart plant of Link-Belt Company, Indianapolis.



Chapoo Road Bridge

The Soochow Creek Bridges

By H. F. Wilkins

THE four reinforced concrete bridge reconstructions across Soochow Creek in Shanghai, the last of which was opened to traffic last December, offer an original solution to an interesting engineering problem. They are all of one type, consisting of a large central span and two smaller side spans. The type has the appearance of three flat arches, but this is not the reality. Flat arch construction is not a practical proposition in Shanghai mud. The peculiar requirements of the problem called for short approaches, a gradient nowhere exceeding four percent; a clearance at high tide sufficient to allow passage of the steam launches that ply the waterway with their trains of barges, and a central span 111 feet from pier to pier.

The result is a system of beam construction that allows a thickness of barely more than three feet in the middle of the central span, providing more than enough strength to bear all the traffic that can crowd on to the 42-foot carriage-way.

In all four cases the bridges consist of beams extending from the shore over the piers in the form of cantilevers and carrying a simple beam which forms the central portion of the midstream span. This type is free from any disabilities arising from unequal settlement of either piers or abutments, and it gives a natural pleasing outline adaptable to some architectural treatment. Experience

has shown this to be a real advantage, as expansion joints on the central span are apt to close entirely under the action of a wholesale inward movement of the creek banks which seems to occur. This movement is owing partly to the effect of dredging and partly to the loading of the creek banks by the modern raised roadways on either side.

Public Works Department

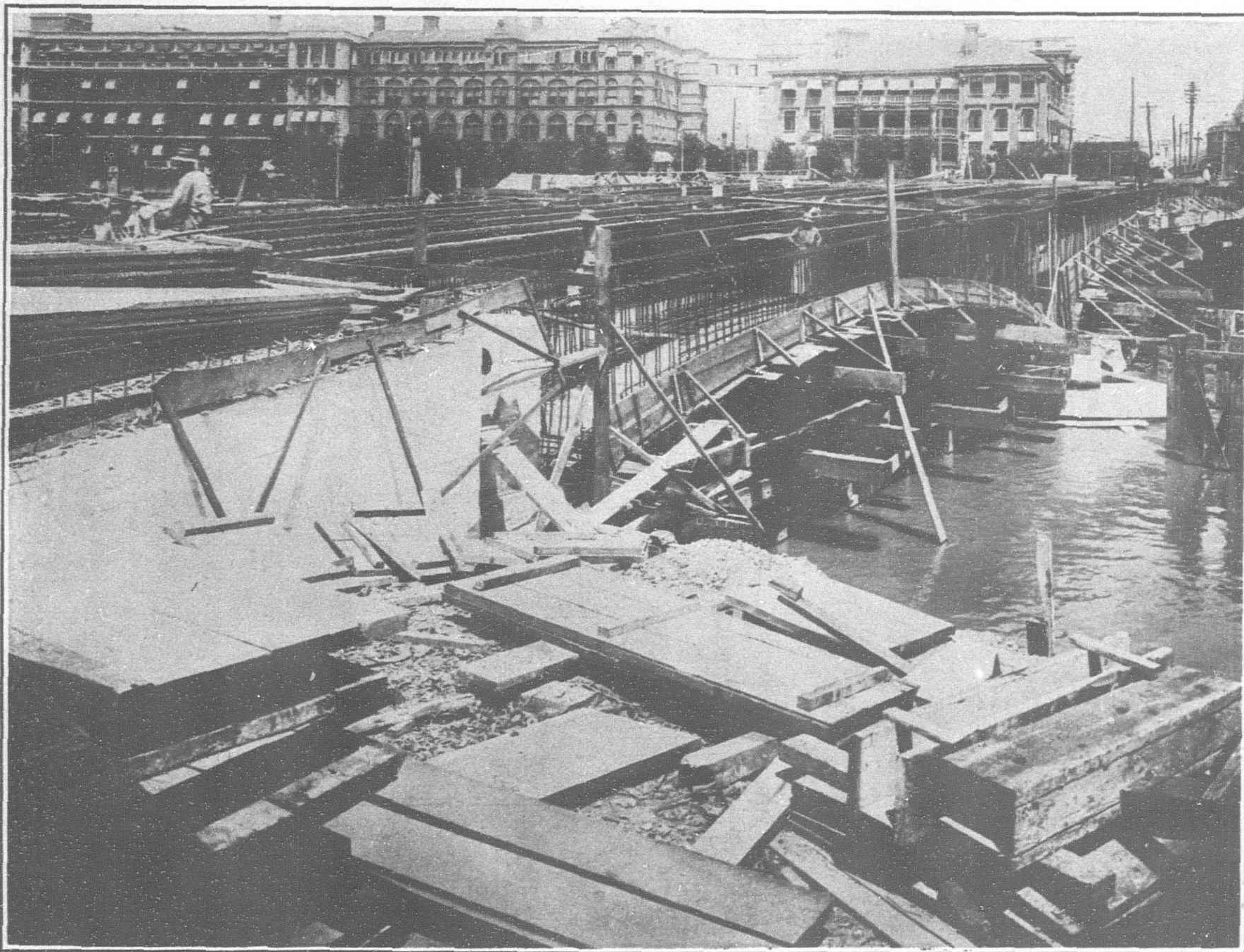
These bridges were all designed by engineers in the Public Works Department of the Shanghai Municipal Council, and construction work was done by contractors under the supervision of the department. They were financed entirely from the department's yearly appropriations, and their construction has been going on for the last six years. The department controls altogether 79 bridges in Shanghai, nine of steel, 16 of concrete and 45 of timber

construction. All of these four across Soochow Creek each cost in the neighborhood of Shanghai Taels 200,000, including roadways, approaches, compensation for condemned property and all other details. In all cases, the new spans replace wooden bridges built years ago, many times patched and re-patched, thoroughly inadequate for the demands of modern traffic and modern city planning.

The Chapoo Road Bridge, nearest the Garden Bridge, is the latest of these four bridges and the most



A View of the Bridge from the Garden Bridge



Reinforcement for Concrete Beams

typical of the peculiar design and construction called for in the Soochow Creek bridge program. Construction was commenced on this job in October, 1925. The foundation and pile work was complete by the end of February, 1926, the falsework piles for the superstructure driven home by the end of March, and the bridge was opened to traffic December 31 of the same year without interruption of waterway traffic at any time while construction was going on.

Construction of Piers, Foundations

The construction of all cofferdam work and pile driving was carried out by Messrs. Ledreux, Minutti & Cie. For the construction of the piers a type of cofferdam was used which is of considerable interest, and which has been employed on all four of the Soochow Creek crossings.

Foundations of the piers are some 20 feet below high water. Frames were constructed of Oregon pine of suitable dimensions for the piers, with the lengths of the sides and ends adjusted to fit an exact number of D section Ransome interlocking steel sheet piles. The frames contained three stages of waling and three of bracing, sufficient altogether to withstand the required pressures and with the parts so disposed as to permit the driving of all sheet piles and foundation piles from the top stage by means of a follower without requiring the

movement of any timber. This avoids at once the chief troubles of cofferdams caused by the placing and removal of struts and walings, and allows a minimum of interference with creek traffic.

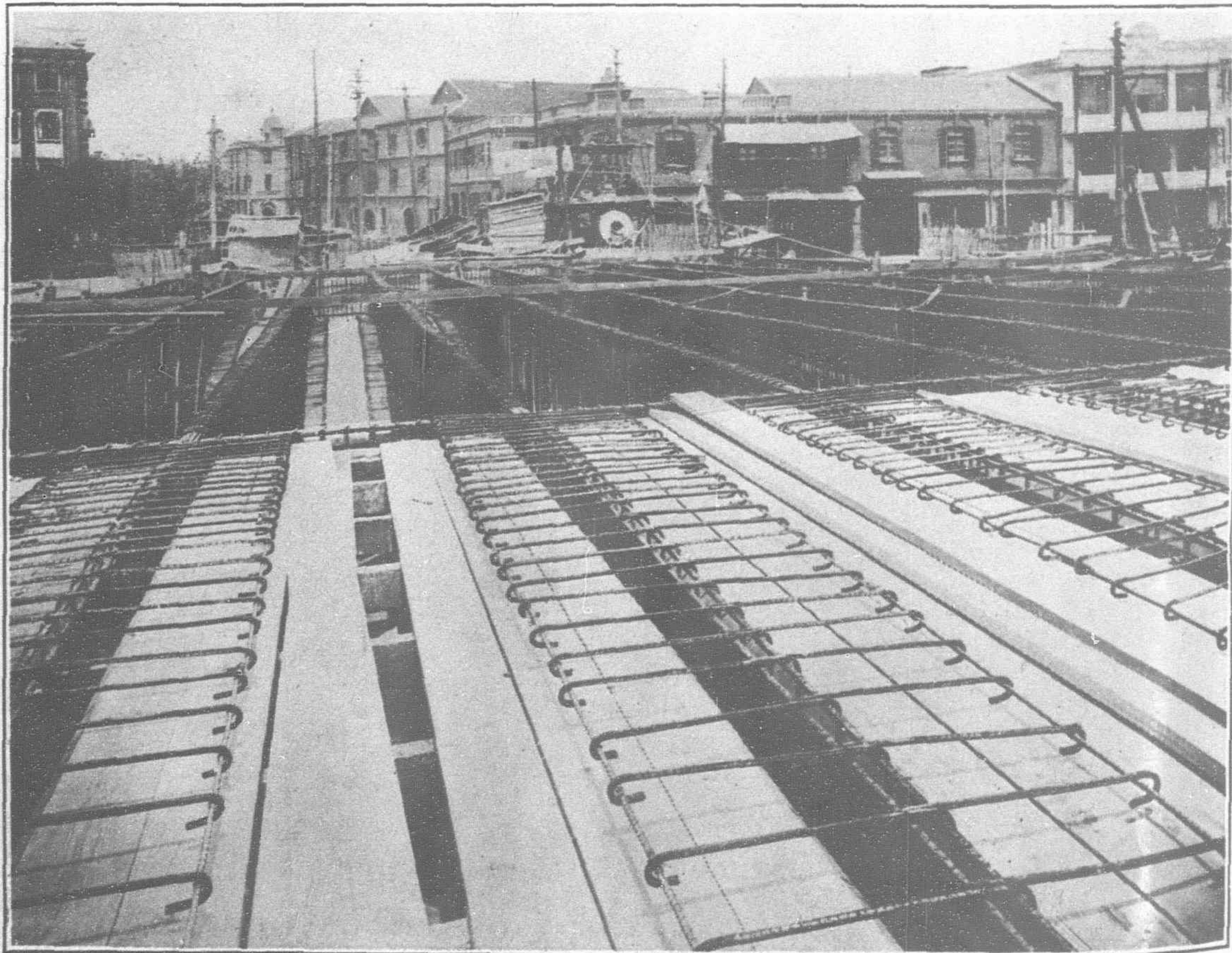
The pier sites were dredged to a level slightly above the top of the base slab and the two frames floated into position and sunk.

From specially constructed pile frames, Ransome steel sheet piles in 40-foot lengths were driven around the cofferdam by means of a drop hammer.

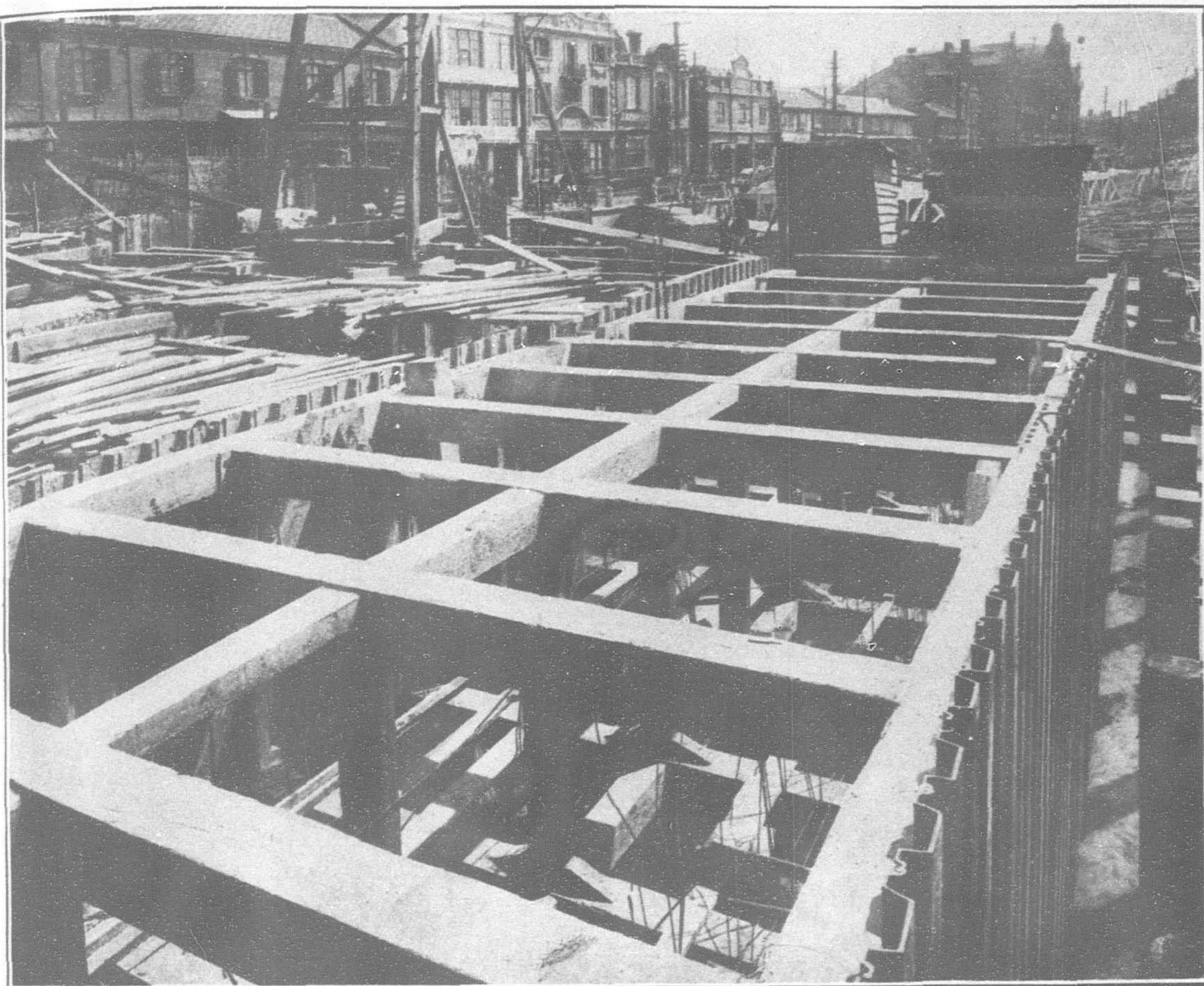
Pumping out the Cofferdams

Two Worthington centrifugal pumps were purchased from Andersen, Meyer & Co., Ltd., for pumping out the cofferdams. One, a 6-inch Class "C" Volute pump was used for the heavier work, and the other, a 4-inch "Newark Special" was used to deal with the daily seepage.

The mud inside the cofferdams was then removed for a depth of about 6 feet below the frames, and the foundation piles driven from the top of the frame by a follower. This space below the frame gives an uninterrupted area in which to place the base slab, which extends over practically the whole floor of the cofferdam. The cofferdam frame, now unsupported from above, is held firmly in position by the pressure of the water on the sheet piles.



Beams at North Approach



Reinforcement of Deck Beams

Subsequent construction of the piers to a level above high water and the withdrawal of the sheet piles presented no special features of interest, but there is one remarkable thing about the sheet piling. It can be withdrawn without much trouble and used over and over again. The same steel sheet piles originally purchased for the Szechuen Road Bridge in 1920, the first of the four bridges to be built, are still in use, having been employed successively in the construction of eight deep cofferdams in the last six years.

The abutments are of simple design in mass concrete, also resting on Oregon Pine piles. They were constructed without difficulty inside braced puddlewall cofferdams and presented no special features.

The piers are of reinforced concrete throughout, and to reduce weight as much as possible, the concrete of the beams where they cross the piers is carried down at an unvarying thickness of 14 inches to rest on a spread base supported on 40-foot piles of Oregon pine. This gives a hollow pier, the sides of these columns being surrounded by a thin reinforced concrete wall.

The Concrete Super-structure

The superstructure of reinforced concrete was poured on formwork resting on piles

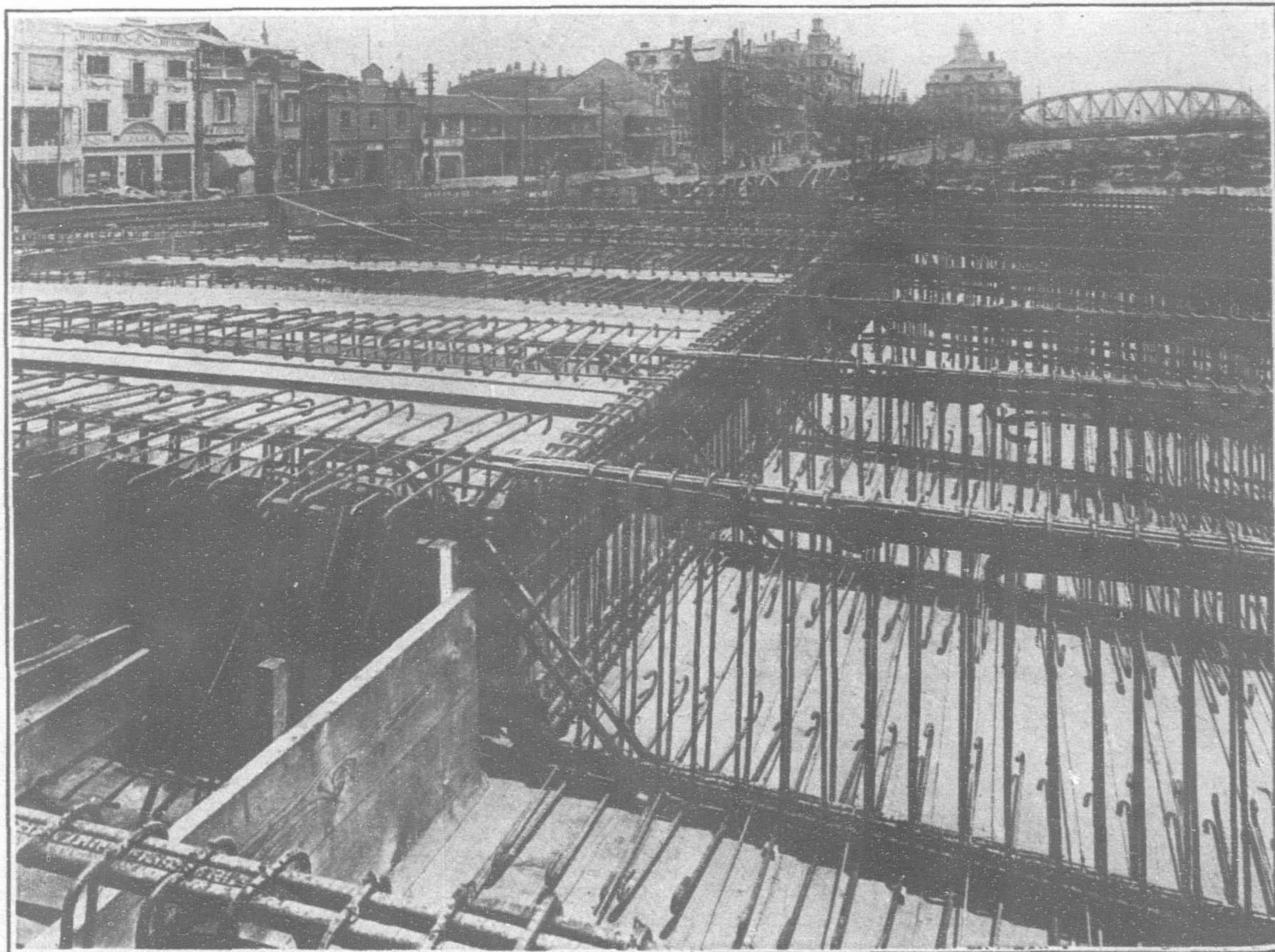
takes care also of the compressive stresses where this is needed.

The vertical clearance under the main span required by harbor authorities made it necessary to raise the approaches to the bridge in order to avoid a gradient of more than four per cent. which is the maximum allowed on municipal roads. This required the

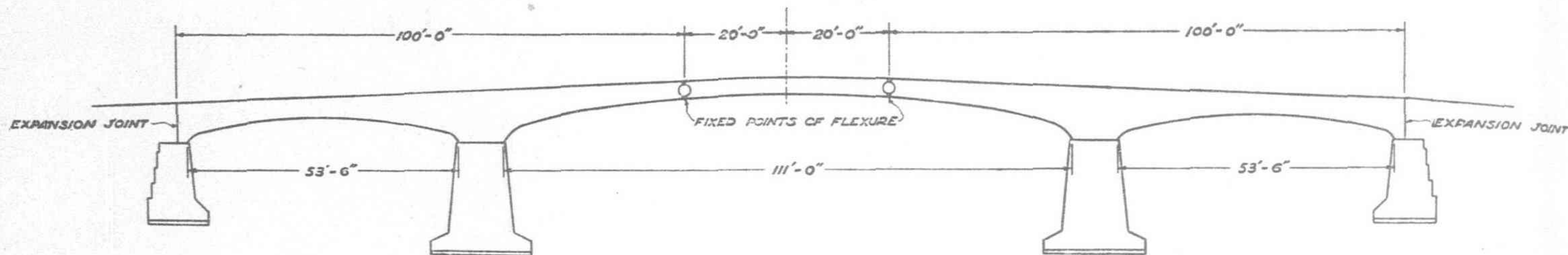
driven on temporary piles driven into the soft mud of the creek bed, arranged so as to give a 50-foot fairway continuously available for boats at midspan. All of this reinforced concrete work on the superstructure was done by Chang Sing & Company of Shanghai, general contractors.

The main beams that run from end to end of the bridge vary in thickness from 8 inches over the central 50 feet to 14 inches over the piers and abutments. Eight inches may seem very thin for such a long span beam, but it was necessary in view of the aforementioned total thickness of some three feet at midstream. A test carried out by the Public Works Department some years ago on a specially designed beam of 60-foot span with a web 3 inches thick showed that this was a quite sound proceeding, affording considerable reduction of stresses in the bridge.

The lower flanges of the roadway beams, except over the central 50 feet, are connected by a concrete slab of varying thickness which prevents damage to the beams from collision with boats and



North Pier Cofferdam



DIAGRAMMATIC OUTLINE OF CHAFOO ROAD BRIDGE

rebuilding of the General Hospital wall and the construction of a retaining wall on the north side, while on the south side, the distance of Soochow Road from the creek bank, combined with slight adjustments for curvature, enabled the raising to be done without interfering with any existing buildings, the new theater on the corner of Museum Road being constructed to the new levels.

Loading Used in Design

The deck of the bridge consists of a 42-foot carriageway and two 9-foot roadways, giving a total road width of 60 feet. Sidewalks are laid with concrete blocks and low rails of thick concrete conform beautifully with the bridge design. Ornamental iron brackets at suitable intervals along the tops of these rails provide lighting facilities.

The carriageway is designed to carry a succession of 14-ton rollers placed in positions to give the maximum loading effect, while the footways are built to carry a continuous load of 100 pounds to the square foot.

The use of a succession of 14-ton rollers for designing does not imply that a vehicle of greater load cannot safely cross the bridge, for it is one of the favorable features of a bridge consisting of long span

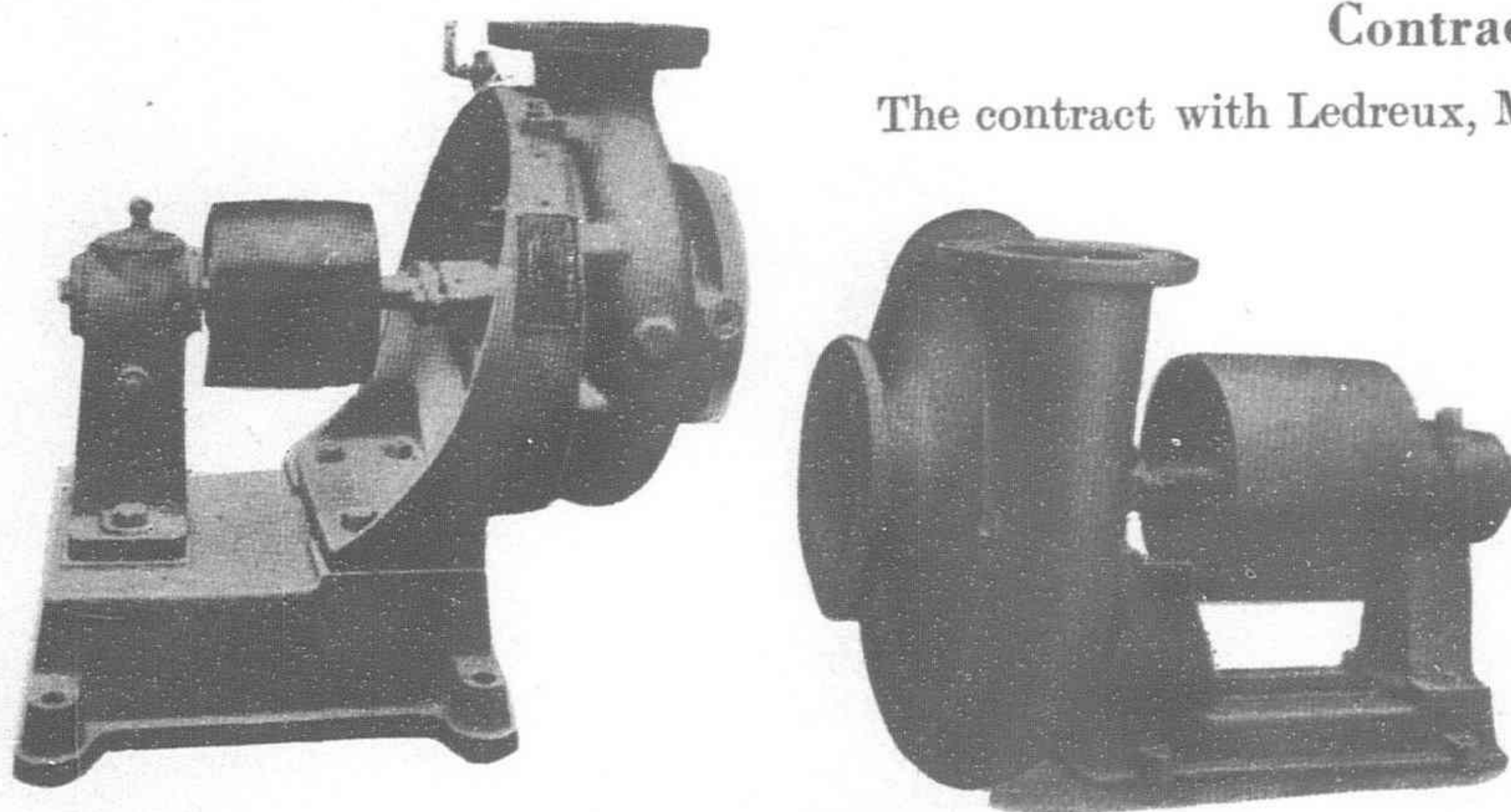
longitudinal girders that it can safely support isolated vehicles of far greater weight than the vehicle used for design.

The wearing surface of the carriageway is experimental at present. It is of rich concrete, one inch thick. This sort of bridge deck on a busy thoroughfare provides a good opportunity for trying the suitability of a concrete surfaced road at very slight expense. If the concrete surface proves unable to withstand the effect of handcarts and wheelbarrows and heavier vehicles with iron tires it will be covered with a surface of sheet asphalt, as on the other new bridges.

Atlas white cement was used throughout in the concrete of the superstructure.

Contract Costs

The contract with Ledreux, Minutti & Cie. called for expenditure of Taels 41,450 for the foundation work and pile driving. The Chang Sing Company was paid Taels 72,000 for the reinforced concrete superstructure. Construction of roadways, approaches, walls, and incidental costs including payments for condemned property cost Taels 60,465 in addition, bringing the total cost to Taels 173,915. This was portioned out in the Public Works Department budget to be included in two years' appropriations, for 1925 and 1926.



Two Worthington Pumps

Belt Drive

2-in. to 8-in. Belted Pump

Shanghai-Nanking Railway

THE Shanghai-Nanking Railway, 327 kilometres in length, is a standard gauge railway bringing into communication several important and prosperous cities in the province of Kiangsu, and having as its Western terminus the great city of Shanghai and leading port of the Western Pacific, and at the other end the ancient capital of Nanking and now the seat of the Nationalist Government, where connection is made with the Northern railways. It may be said that it forms the first link in the railway chain connecting Asia with Europe by way of the Trans-Siberian Railway.

Gross receipts for the year ending December 31, 1926, amounted to \$9,157,252 or \$313,560 in excess of the gross receipts of the previous year, but of the former amount \$674,569 is included for military traffic.

Expenditure at \$5,805,866 showed an increase of \$851,751 compared with 1925, the operating ratio being 63.40 per cent. against 56.02 per cent. Net earnings at \$3,351,386 consequently showed a decrease of \$538,191. Interest on funded debt amounted to \$1,565,232 and produced £154,362½.

Coaching traffic shows a net increase of \$607,631. In Goods traffic a net decrease of \$189,166 was recorded.

	1925	1926
Passengers, number	8,863,989	11,313,102
Passenger Revenue	\$5,789,940	6,397,571
Revenue per kilometre	14,493	18,064
Tonnes carried	1,046,004	1,532,315
Goods Revenue	2,805,764	2,616,598
Revenue per Tonne-kilometre	0.74	0.69
Other operating revenue	245,037	125,690
Train kilometres	2,245,936	2,737,225
Kilometres worked	327.133	327.133

Expenses for Maintenance of Ways and Structures increased by \$124,159. In Maintenance of Equipment Expenses there was an increase of \$93,824 owing principally to the cost of repairing engines and rolling stock damaged as a result of Civil War, and owing also to the heavy repairs required to certain of the passenger and good engines now worn out through age and excessive working due to shortage of power. Transportation expenses (including traffic) amounted to \$2,990,793, the increase of \$473,546 over the previous year being almost entirely due to the military occupation of the Line.

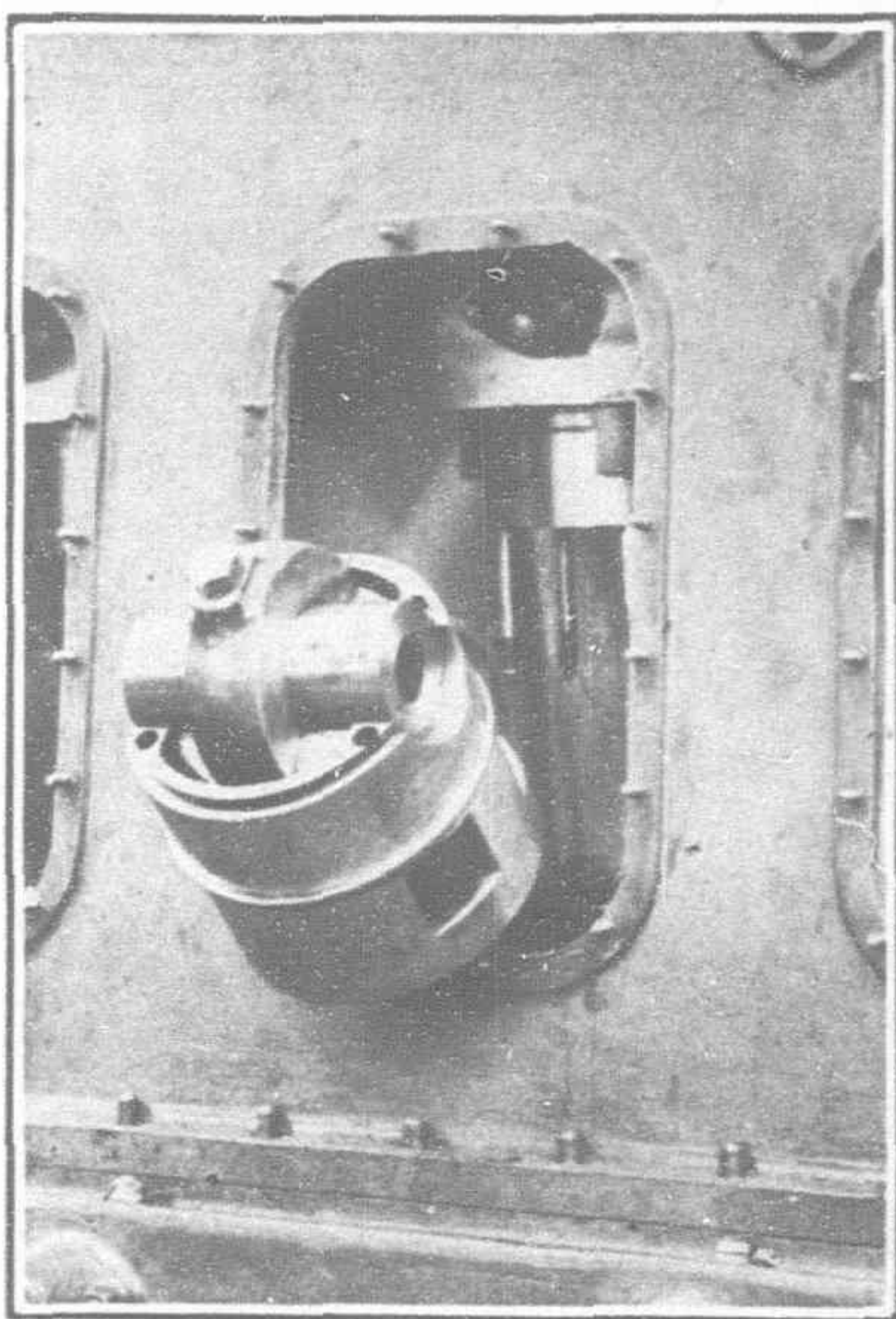
The Ruston Oil Engine Driven Generator Set

RESSRS. Ruston & Hornsby, Ltd., are producers of a notable type of marine engine, which has been described in "The Engineer," as follows:

The engine is of the four-cycle airless injection type and has five cylinders, each with a bore of 12-in. and a stroke of 17½-in. It is designed for a very moderate rated output of about 250 b.h.p. when running at a speed of 300 r.p.m., and is coupled to a 165 k.w. 220-volt generator built by the General Electric Company, Ltd., of Witton. From our illustration it will be seen that the dynamo is mounted on a substantial bed-plate which is bolted to the main bed-plate. The same width is retained for the two bed-plates and for that reason the portions of the dynamo bed-plate which carry the fly-wheel cover and the magnet frames are slightly overhung. A light metal shield is carried over the top of the generator in accordance with the usual marine practice.

Although in the main the engine does not widely depart from standard Ruston practice, we noted several interesting points in the design. The bed-plate of the engine is of the box pattern and is strongly ribbed. It contains a very deep lubricating oil sump at the pump end, which is fitted with baffles so that the lubricating oil pump suction is always covered, even although the bed-plate should depart

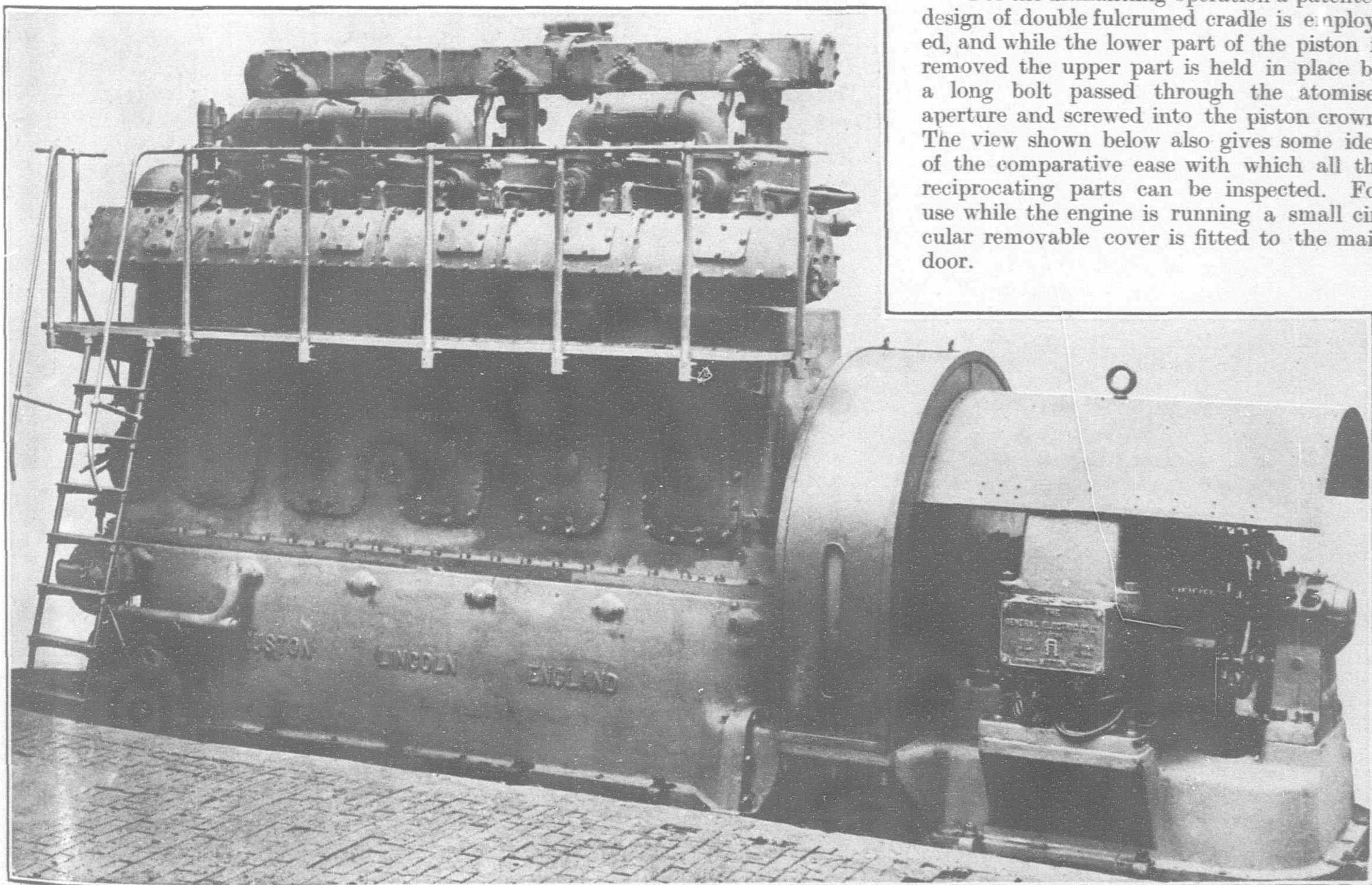
slightly from the level owing to the movement of the ship. At the bottom of the bed-plate sump, below the center of each cylinder, two special fulcrum pieces are cast in order to facilitate the removal of the connecting-rod and piston to be referred to later on. The crank shaft is drilled for forced lubrication, which system is also extended to the crank pin and gudgeon pin bearings. As with five cylinders there is an unbalanced couple, balance weights are fitted to the two outer crank cheeks, one at either end of the engine.



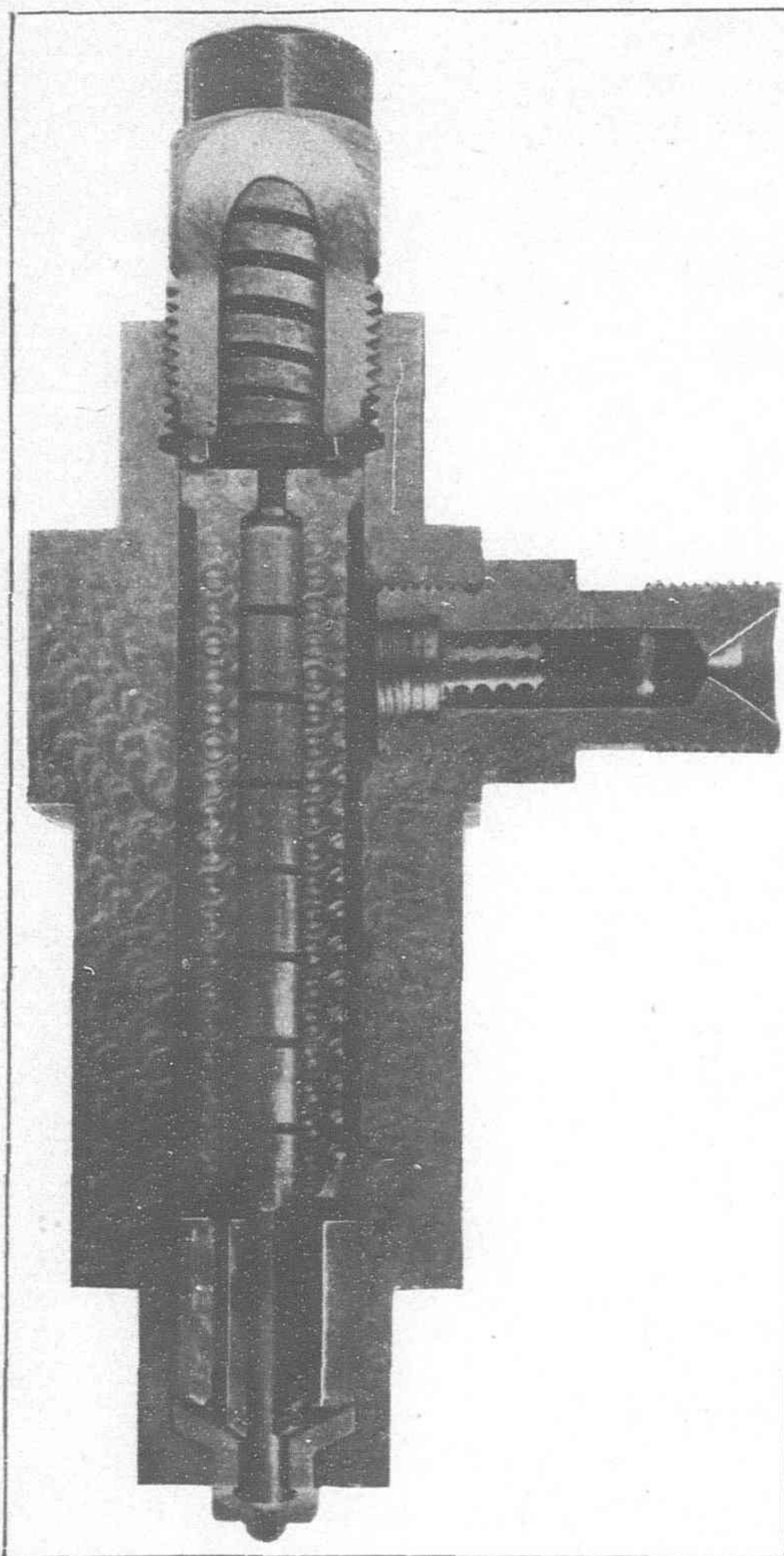
Showing Large Inspection Door and Method of withdrawing Piston on the Ruston Marine Auxiliary Oil Engine.

A monobloc crank case is employed into which the cylinder jackets and liners are inserted. The lower part of the jacket and the liner can clearly be seen in our second illustration, which shows the large size of the inspection doors. That view also shows the two-part 12-in. diameter piston, the skirt of which is drawn forward on its rod and is ready for lifting out. Part of the piston head is seen projecting below the liner. It carries seven piston rings and is secured to the skirt by four through-going bolts, the heads of which are housed in recesses in the piston skirt; one of these recesses is seen to the right of the skirt. Passing reference may be made to the stepped type of bearing for the floating gudgeon pin, which gives maximum bearing surface on the top side of the piston bearing and the underside of connecting-rod top end bearing.

For the dismantling operation a patented design of double fulcrumed cradle is employed, and while the lower part of the piston is removed the upper part is held in place by a long bolt passed through the atomiser aperture and screwed into the piston crown. The view shown below also gives some idea of the comparative ease with which all the reciprocating parts can be inspected. For use while the engine is running a small circular removable cover is fitted to the main door.



Ruston 200-Kw. Marine Auxiliary Oil Engine Generating Set.



Section through Atomiser
Ruston Airless Injection
Oil Engine.

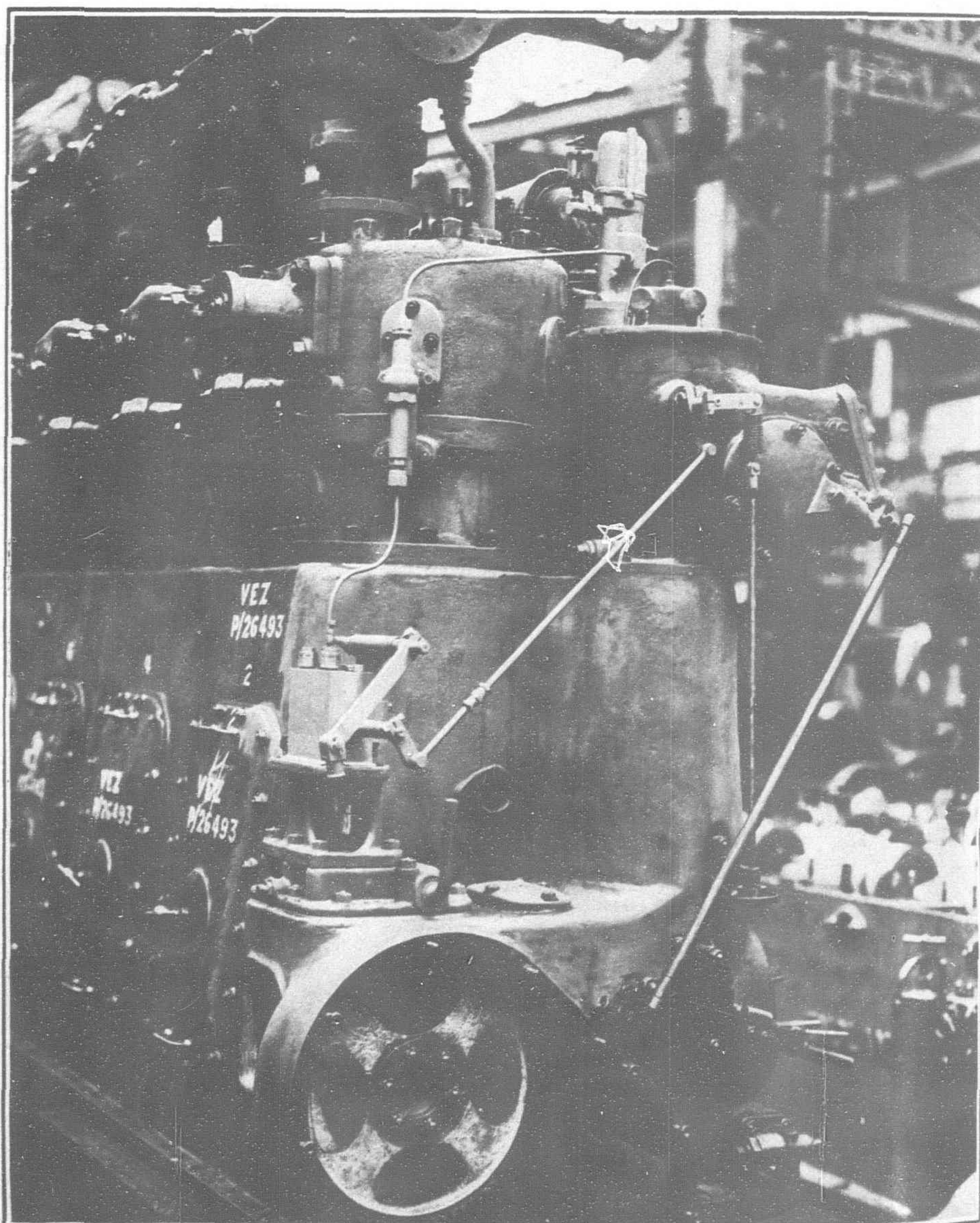
A cast iron cylinder cover is bolted to the water jacket casting and in the larger sizes of engine a cast steel lower flange is fitted to the cylinder cover. The valve gear is of the standard Ruston type with horizontally arranged air inlet and exhaust valves, the former being placed at the front and the latter at the back of the engine. At the back of the cover to the right a combined air starting and compression relief valve is fitted on each cylinder. The fuel atomising valve is a vertical valve placed in the center of the cylinder cover.

The valve gear is driven from the

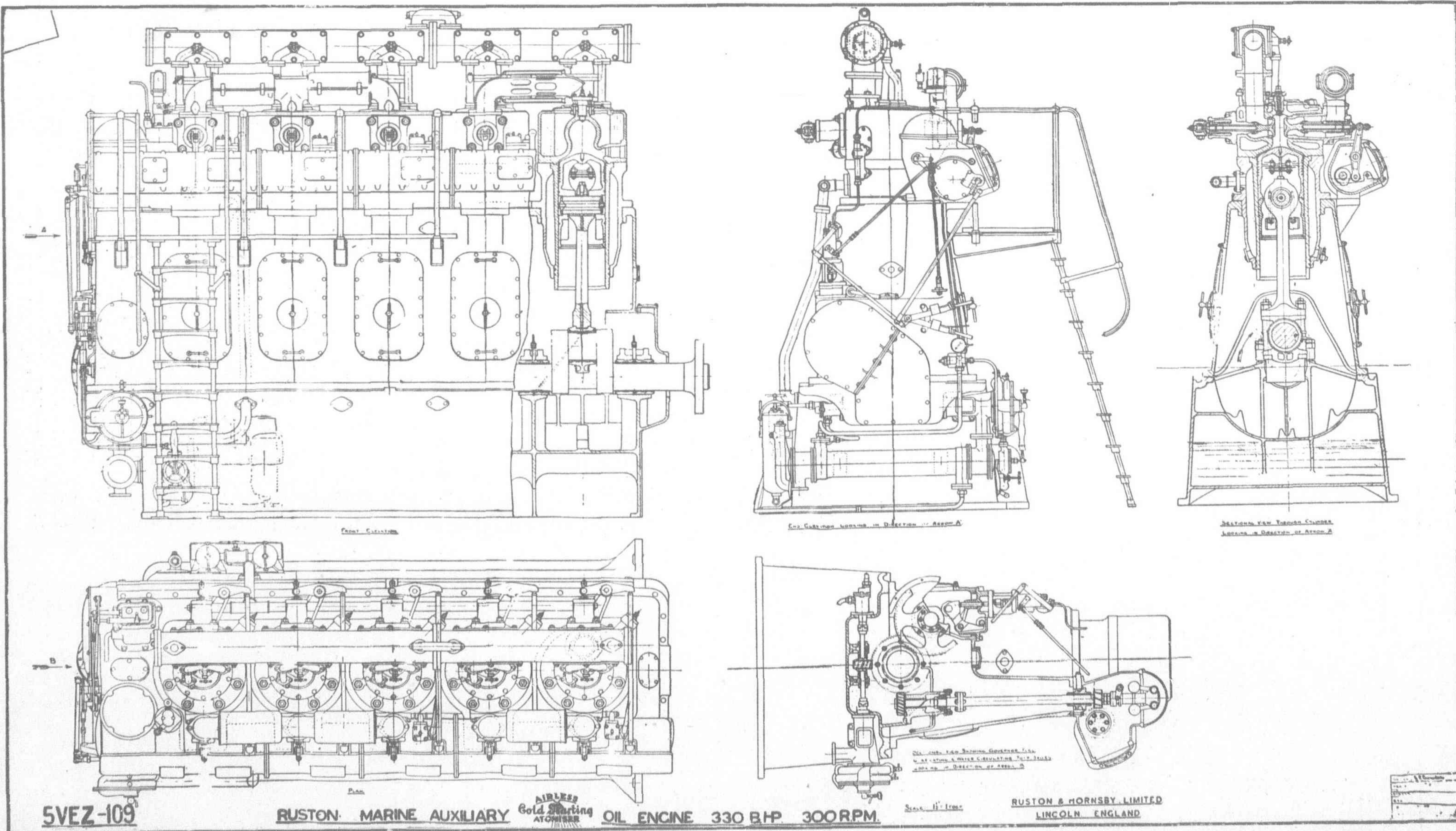
Reference may be made to the starting and control arrangements. As already mentioned, a starting valve is fitted on each cylinder, which is of the automatic type. The compressed air which is hand controlled by a main valve placed near the starting platform passes to spring-controlled distributing valves mounted above the cam shaft and situated slightly to the right of each cylinder. When the air pressure depresses a cam tappet the starting air is delivered to the cylinder valve at the correct part of the stroke of each cylinder by timed cams. There is a hand lever at the left hand end of the engine which controls the compression release valves, and another lever which may be utilised to cut off the supply of fuel to the atomiser valves. The fly-wheel is provided with spaced barring holes in which a hand barring lever is placed, a slot being provided in the fly-wheel cover, as shown above, for this purpose. There are two fuel pumps, which deliver the fuel to a distributor with a reciprocating plunger which is provided with ports for directing the fuel to each of the five atomisers in turn. A full account of this fuel oil distributing gear will be found in our issue of June 11, 1926.

The generator set we have described appeared to run very quietly, and it has already undergone extensive and successful bench tests. In a continuous trial extending over the whole of one week an average fuel consumption of 0.61-lb. of oil per kilowatt-hour was attained. Engines of the type we have described are now made by the firm in three cylinder units up to a total output of 150 b.h.p. for marine propulsion purposes. For marine auxiliary sets of the type illustrated the sizes range from 30 k.w. three cylinder units up to six cylinder units of 500 k.w. capacity, the intermediate sizes being built as either three, four, five, or six-cylinder engines as required.

crank shaft by a neatly arranged and totally enclosed skew gear drive at the left-hand end of the engine. This arrangement also provides for a direct spur gear drive for the two fuel pumps and an undertype worm drive for the water circulating and forced lubricating pumps. The pumps draw their supply of oil from the sump through duplicate vertical filters fitted with a change-over valve so that either filter can be cleaned while the engine is running. The filters are arranged at the back of the engine and a Serck oil cooler is fitted at the end of the bedplate. The circulating water pump, which is of the two-stage centrifugal type, will be seen above near the left-hand end of the engine, and a cooler is also provided. Near to it is a hand priming pump for the lubricating system. We may remark on the totally enclosed cam shaft casing. The shaft runs in oil and the casing also carries the valve operating levers which work the air inlet valves direct and the exhaust valves through push rods which are carried between the cylinders on the right of each cylinder. The cam shaft casing is provided with removable inspection doors. A platform which runs the full length of the engine gives access to the valve gear. Both the air inlet manifold and the exhaust manifold are arranged above the cylinder heads and the exhaust pipes are water jacketed. The cooling water leaving the cylinder jackets and covers passes into the exhaust manifold. A regulating valve is provided above each cylinder.



End View of Ruston Oil Engine Showing Full Pump and Distributor Gear
on 5 Cylinder Marine Auxiliary Type Oil Engine.

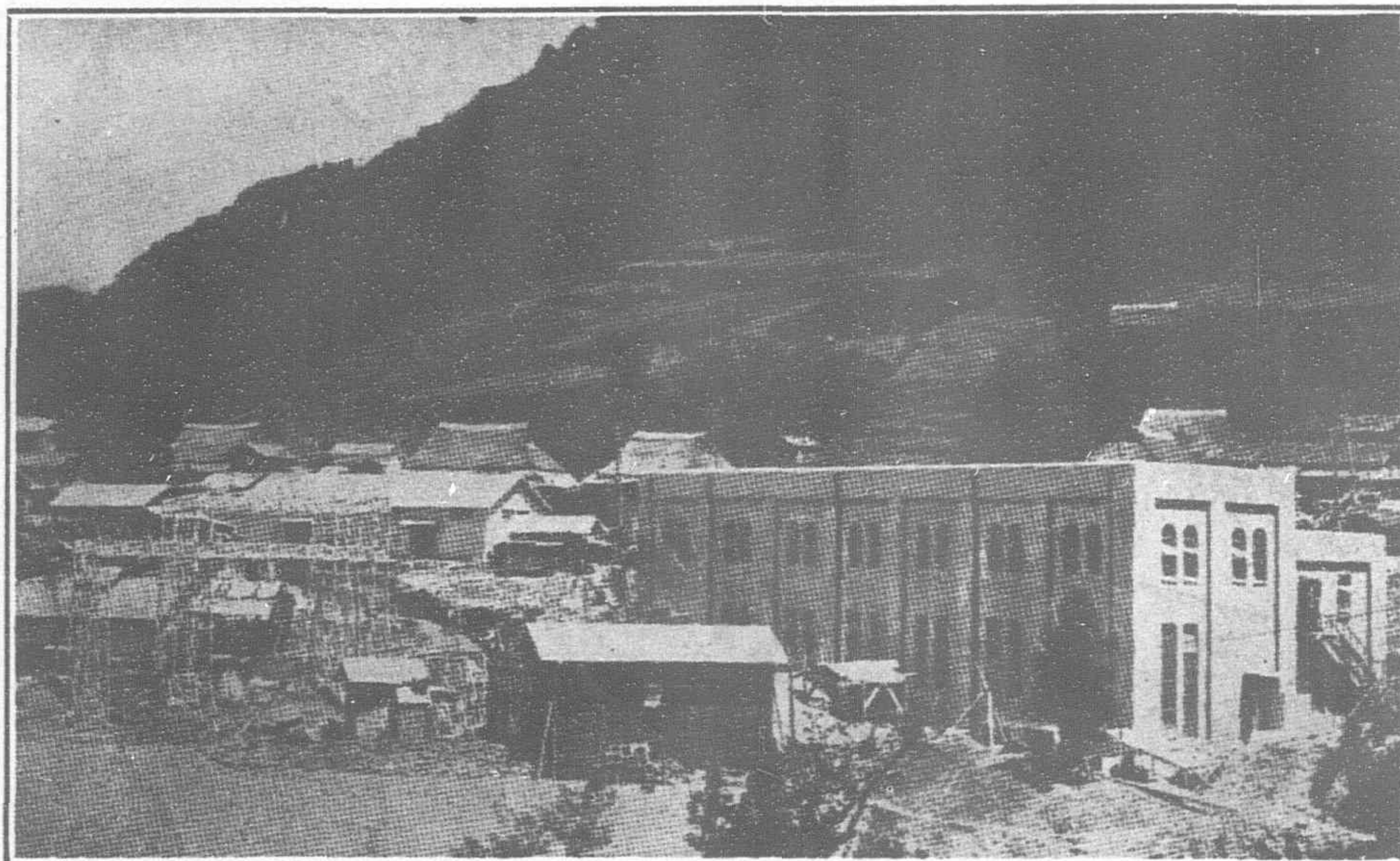


Aso Hydro-Electric Plant, Japan

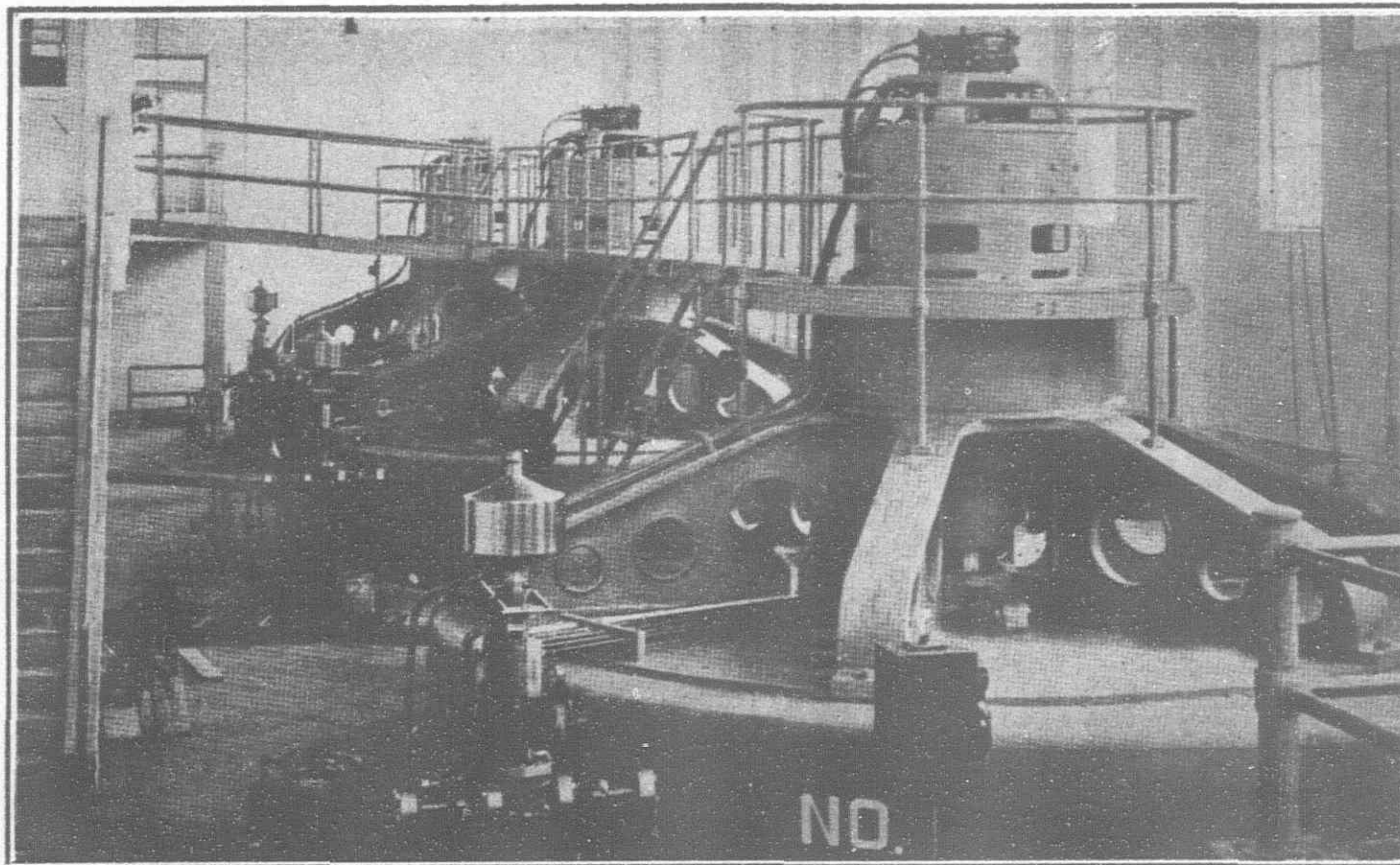
ONE of the most recent and up-to-date generating stations in Japan is the Aso Hydro-electric plant of the Power Company, located in the Gifu Prefecture on the Hida River, a tributary of the well-known River Kiso.

There are three 10,125-kv-a. generators, with direct-connected exciters driven by I. P. Morris vertical water turbines. Power is generated at 6,600 volts and stepped up by two banks of water-cooled core type transformers, each of 15,000-kv-a., with a 5,000-kv-a. transformer as spare. The station is completely equipped with accessory apparatus, including air compressor, oil filter and drier. The switchboard is fitted with mimic buses and mimic disconnecting switches to facilitate quick and accurate operation. Test terminals are provided so that meters, instruments, and relays can be quickly and conveniently tested.

Temperature indicators mounted on the control board allow close supervision of the heating of generator and transformer windings under all conditions of load.



The Aso Plant



Three 10,125-KV-A. G-E Alternators, 6,000-Volt, 3-Phase, 60-Cycle, 257 R.P.M. in the Aso Hydro-Electric Station

High voltage switching is done in an outdoor station of steel framework. Lightning protection is afforded by oxide film arresters.

Generators, transformers, switchboard, switchgear and lightning arresters were made by the General Electric Company, U.S.A. The generators are of the modern welded steel plate construction practically no casting being used. This results in reduced weight, and eliminates chances of breakage in transportation.

The machinery has passed all tests and the full load efficiency of the generators is shown to be 97.2 per cent. This high efficiency is of great importance in a hydro-electric plant, particularly if faced by a shortage in the water supply.

Due to the flow characteristics of the Hida River, the waterwheels are located a considerable distance below the generators, connection being through a hollow steel shaft with suitable guide bearings. The chamber in which the waterwheels are located is reached by an electric elevator, serving all floors of the plant in addition to the usual stairways.

Preliminary Investigation and Estimate of the Kaomi-Chefoo Railway*

By C. Y. Kao, M.S.E., MEM.A.C.A.E.

THE Shantung authorities, in developing the fertile territory of eastern Shantung, intended to build a railroad connecting Kaomi and Chefoo to serve that region, and have been negotiating with foreign financial groups to float a loan for that purpose. The writer was asked to prepare a preliminary report and estimate of the proposed railway line, over the route of which he took an investigation trip last summer. It will be of interest to the engineers in this country to be informed of the possibilities of the project.

The proposed Kaomi-Chefoo Railway connecting Kaomi, a principal station of the Kiao-Tsi Railway, and Chefoo, an important seaport of North China, is a revised line of the projected Chefoo-Weihsien Railway, over the route of which a motor-bus service is now being operated, and over a third of which must be relocated before becoming serviceable as a rail-bed. The Kaomi-Chefoo Railway has many points of superiority over the Chefoo-Weihsien Railway, the principal ones of which are two. Firstly, while the

Chefoo-Weihsien Railway is a coastal line, which cannot very well compete with navigation, the Kaomi-Chefoo Railway is an inland route running through the central part of Shantung peninsula. Secondly, while the Chefoo-Weihsien Railway crosses many trunk rivers, the Kaomi-Chefoo Railway crosses a few tributaries, which do not require heavy bridgework.

The Kaomi-Chefoo Railway has an approximate mileage of 140 miles and traverses through Kaomi, Pingtu, Laiyang, Hsihsia, Fusang, and Chefoo. It may be extended southward to Hsuchowfu, the intersection of the Tsin Pu and Lung Hai railways, through Chuchen, Luthsien, and Ichowfu, a distance of about 200 miles.

The Kaomi-Chefoo Railway serves the entire eastern half of Shantung peninsula, the most productive country of North China, and the provinces of Shantung and Honan, and possibly Chihli,

*"The Oriental Engineer."

(Continued on page 412).

Electric Light Plant at Tientsin

A Striking Example of What may be Accomplished by the Efforts of a Comparatively Small Community if Rightly Directed

THE Electricity Department of the British Municipal Council of Tientsin, of which Mr. R. A. Williams, M. C., B. Sc., A.M.I.E.E., A.M.I.M.E., is the electrical engineer, came into being in 1920; it has operated its own generating station since 1922, and the gross profit, before providing for interest and loan repayment

(or depreciation), represents 24.8 per cent. on the capital outlay, a better return than that earned by any municipal or company undertaking in Great Britain, and higher than any published in China. The engineer's annual report for 1926 shows that the year's income reached £47,890 and the net profit £11,970 the latter sum being slightly less than the 1925 figure; since 1920, the Electricity Department has returned no less than £55,240, or 50 per cent. of its capital outlay, to the Council's general funds, and the fact is worth emphasizing that the capital outlay of £107,800 of this well-equipped undertaking represents the commendably low figure of £21.5 per kw, and covers not only the total cost of the 5,000-kw power station, but also that of the transmission and distribution mains, connections to consumers, meters, etc., being lower than that recorded by any other municipal system in China or Great Britain.

Elimination of the personal element is a feature of the British Municipal Council's new electric power station constructed, under supervision of their electricity department, above flood level on the western bank of the Weitz creek in the British concession, Tientsin.

The present handsome structure of red brick and concrete, with its most up-to-date machinery, may be said to be the outcome of the amalgamation of the two former British administrations, so long the bone of contention among British residents of the port. When the British municipal concession joined hands with the British municipal extension and its additional extra-mural area, and threw their organizations and aspirations into common channels, the combined council seemed to take on a new lease of life. They decided

to extend the sphere of municipal enterprise, refused to renew the expiring franchise of the old Tientsin Gas & Electric Light Company, and decided to build and conduct their own power plant.

When the council decided to construct its own plant it was first planned to install two 500 kilowatts sets, alternating current,

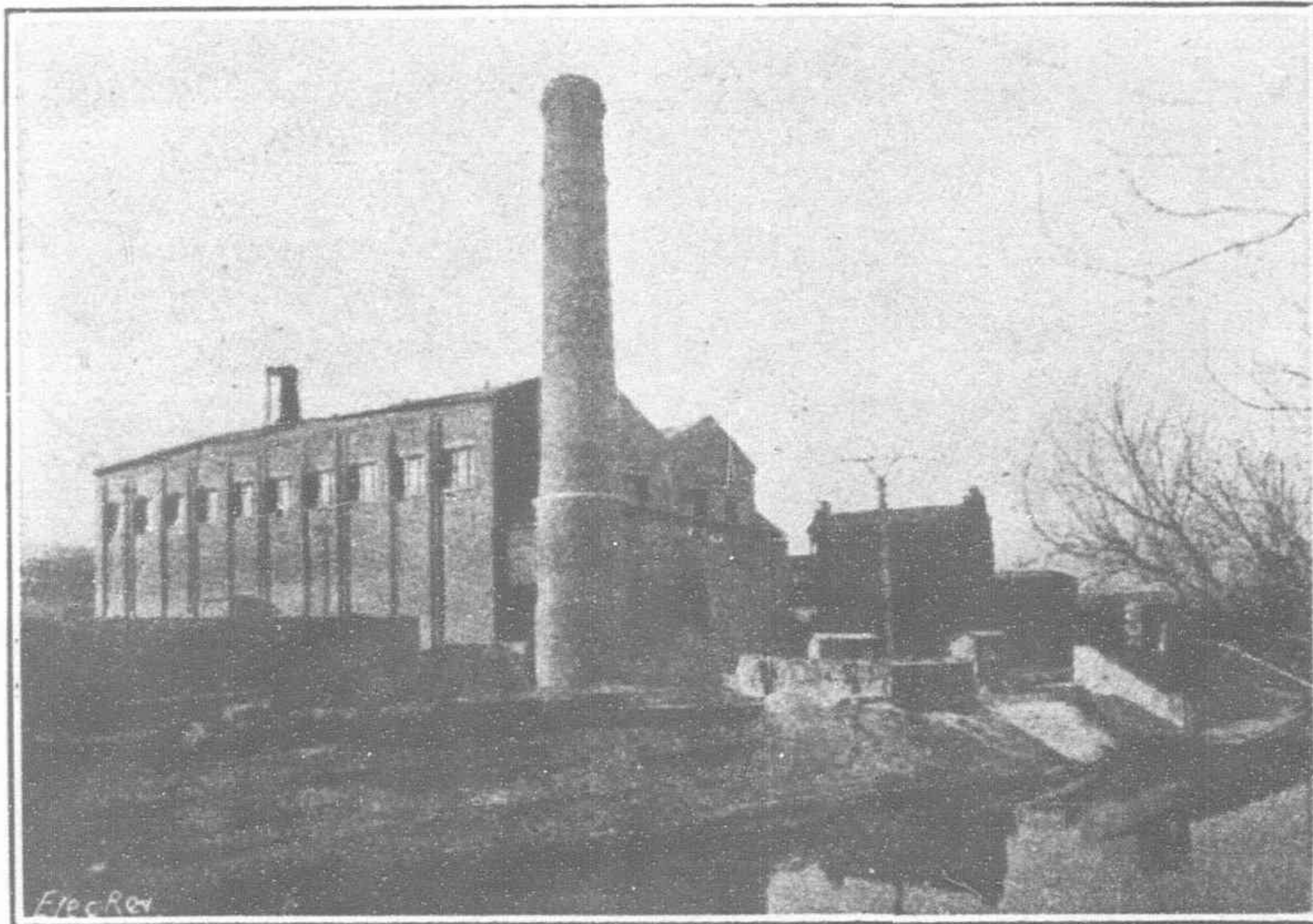
but it was soon found on investigation of the probable load that these would be insufficient. After thrashing it out in a public meeting, the council, acting upon the recommendation of Mr. R. A. Williams, decided to install two 1,000 kilowatts sets, alternating current, 5,000 volts 50 cycles, 3 phase, to be transformed as required to 380 volt for power and 220 for light in the concessions. These sets have an overload capacity of 25 per cent.

The station now contains two Howden-G.E.C. steam turbo-generators of 1,250 kw each, and one Metropolitan-Vickers set of 2,500 kw; a duplicate of the last-named set is on order, and it is hoped that it will be in operation

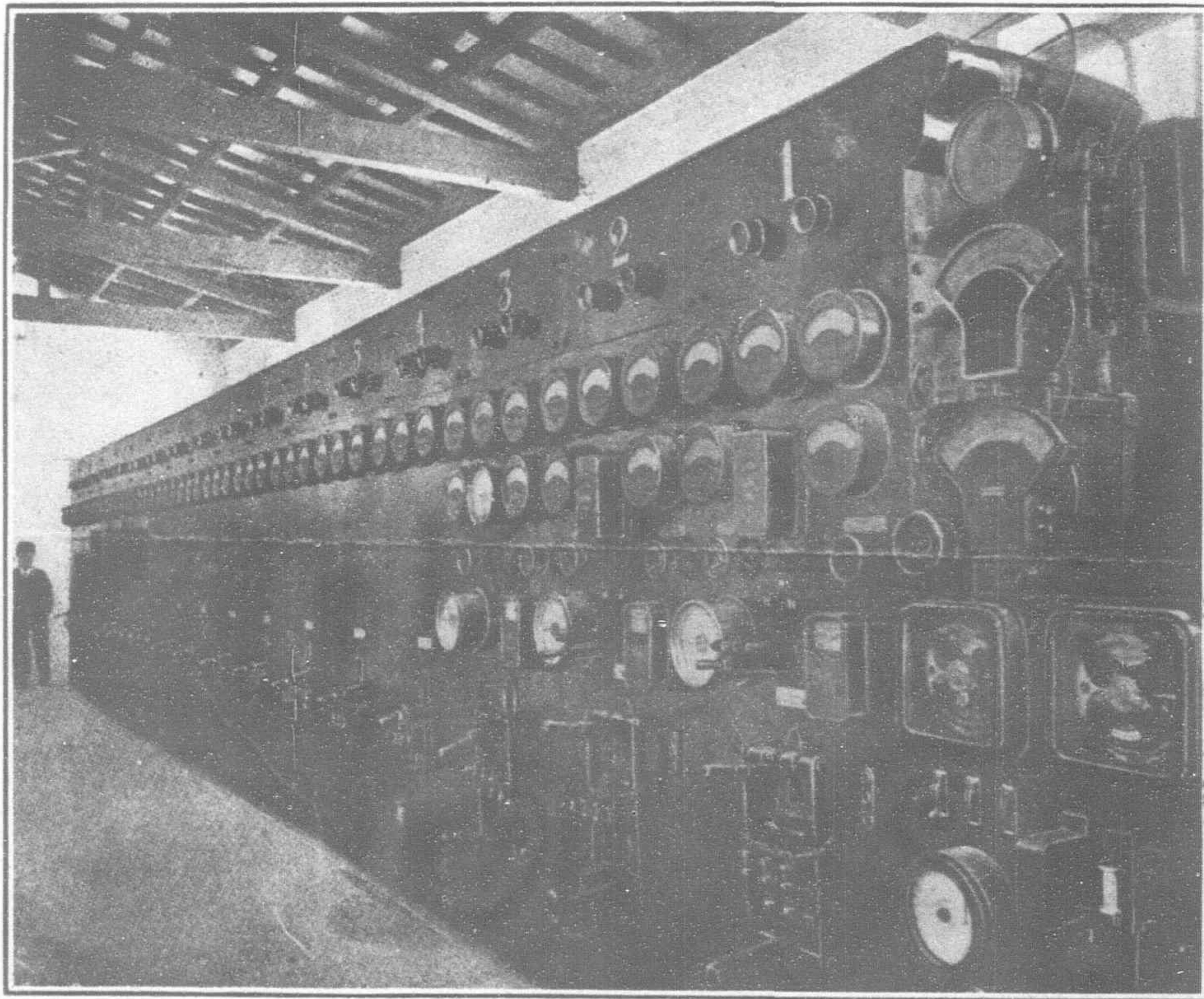
early in the autumn. The l.p. switchboard was constructed by the Department's own staff. In the boiler house a new marine-type boiler, with which an air pre-heater has been incorporated, was erected entirely by the Department's staff, and put into commission in 1926. Five Babcock and Wilcox boilers are now installed, with a total steaming capacity of 86,000-lb.

per hour. Apparatus has been fitted to the new boiler to prevent the emission of dust, and also fan and air ducts for cooling its driving motor, with a spare motor on the right. The total amount of coal consumed in 1926 was 8,725 tons, or 3.22-lb. per kwh generated, which, however, included the fuel consumed for the distillation of 150,000 gallons of water sold to ice and mineral water factories and that used for heating the station offices.

Transmission and distribution are carried out by means of an overhead system. During the year it was necessary to construct six new substations, two of 50 kw, one of 75 kw, and three of 150 kw,



Tientsin Power Station.



Main High-voltage Switchboard.

besides doubling the capacity of three others; the total capacity of all sub-stations is now 3,525 kw, and they are all of the outdoor type.

The maximum demand of the year under review was 2,270 kw, an increase of 20.50 per cent., whilst the load factor of the distribution system was 25.2 per cent., and that of the generating system 30.6 per cent., the improvement in both cases being largely due to the greater use made of cookers and other electrical appliances. The total sale of electricity amounted to 4,720,506 kwh, which represents a satisfactory increase of 25.7 per cent., and compares favorably with the average increase in Great Britain of 9.5 per cent. Table I indicates the amount of energy sold for various purposes during 1926, whilst Table II shows that the charges for electricity in Tientsin are now about the lowest in the Far East. The total number of consumers at the end of the year amounted to 2,220, an increase of 9 per cent.; the average number of kwh sold per consumer amounted to 2,140 kwh, which is a fairly high figure, considering the lack of power load in the district.

The amount of private lighting was 2,598 kw through 2,457 meters, an increase of 9.2 per cent., but the actual consumption of electricity used through the lighting meters increased by 21 per cent., which is an indication of the increasing use of electricity both for lighting and also for small heating appliances that are connected to the lighting circuits.

The use of electricity for power continues to increase, though the stagnation in trade retards progress in this direction very considerably. There was an addition of twenty-two motors (with a capacity of 259 kw) to the mains, which raises the total power load on the system to 2,012 kw, an increase of 15 per cent.

The energy sold for power purposes amounted to 1,124,876 kwh, but the increase in this case (43 per cent.) is much greater in proportion than the amount of new power connected, and it indicates that longer use is being made of the motors.

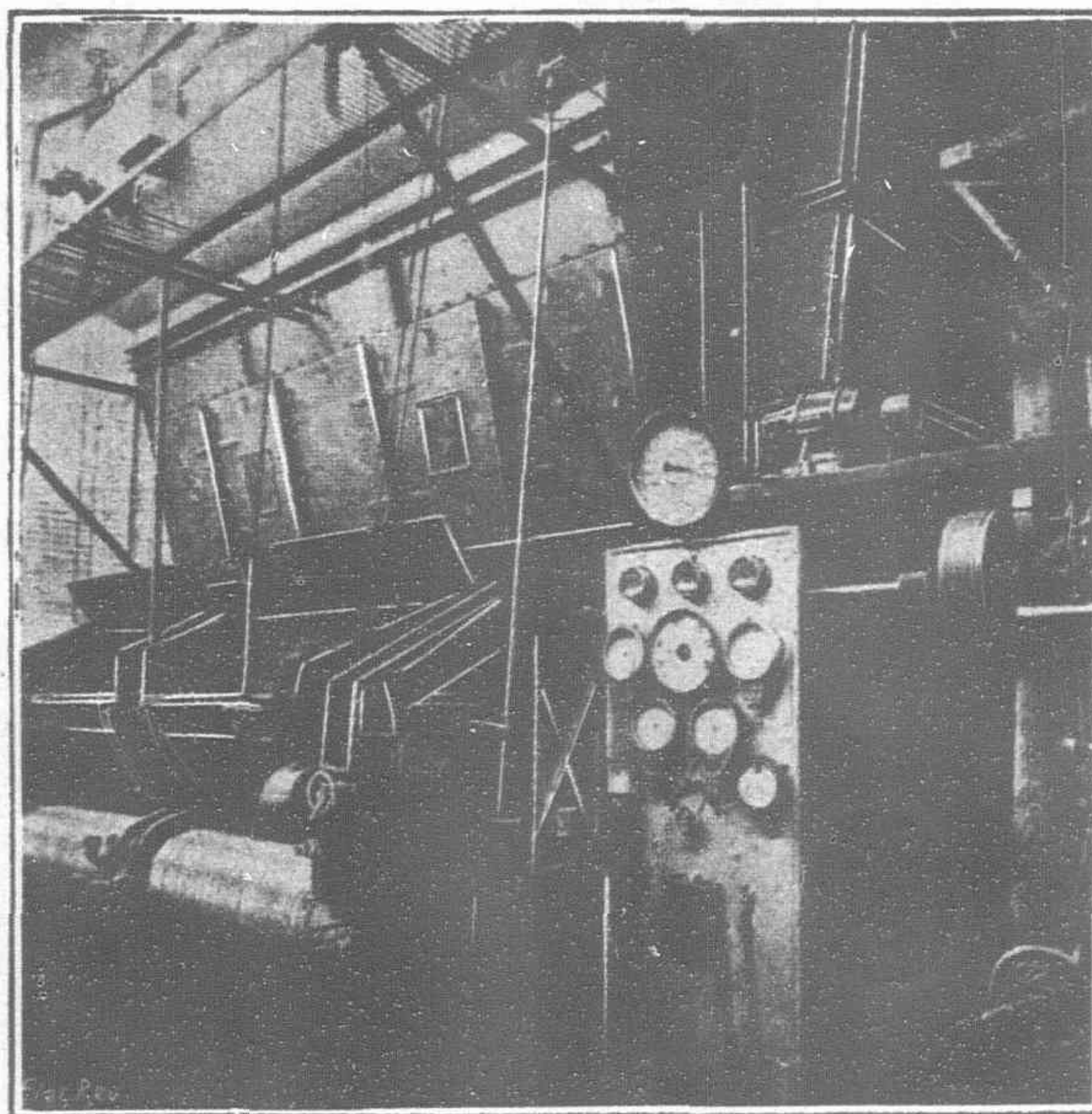
Importance is attached to the use of electricity for domestic purposes, and during the past year 28 new

electric cookers were installed, having a load of 189 kw, and at least double this number would have been hired from the Department had the cookers been available; the hiring scheme for cookers instituted two years ago has been greatly appreciated, and cookers now connected amount to a total capacity of 556 kw, compared with 77 kw. in 1924 and 576 kw. in 1925, and the electricity used for cooking has been doubled during the past year.

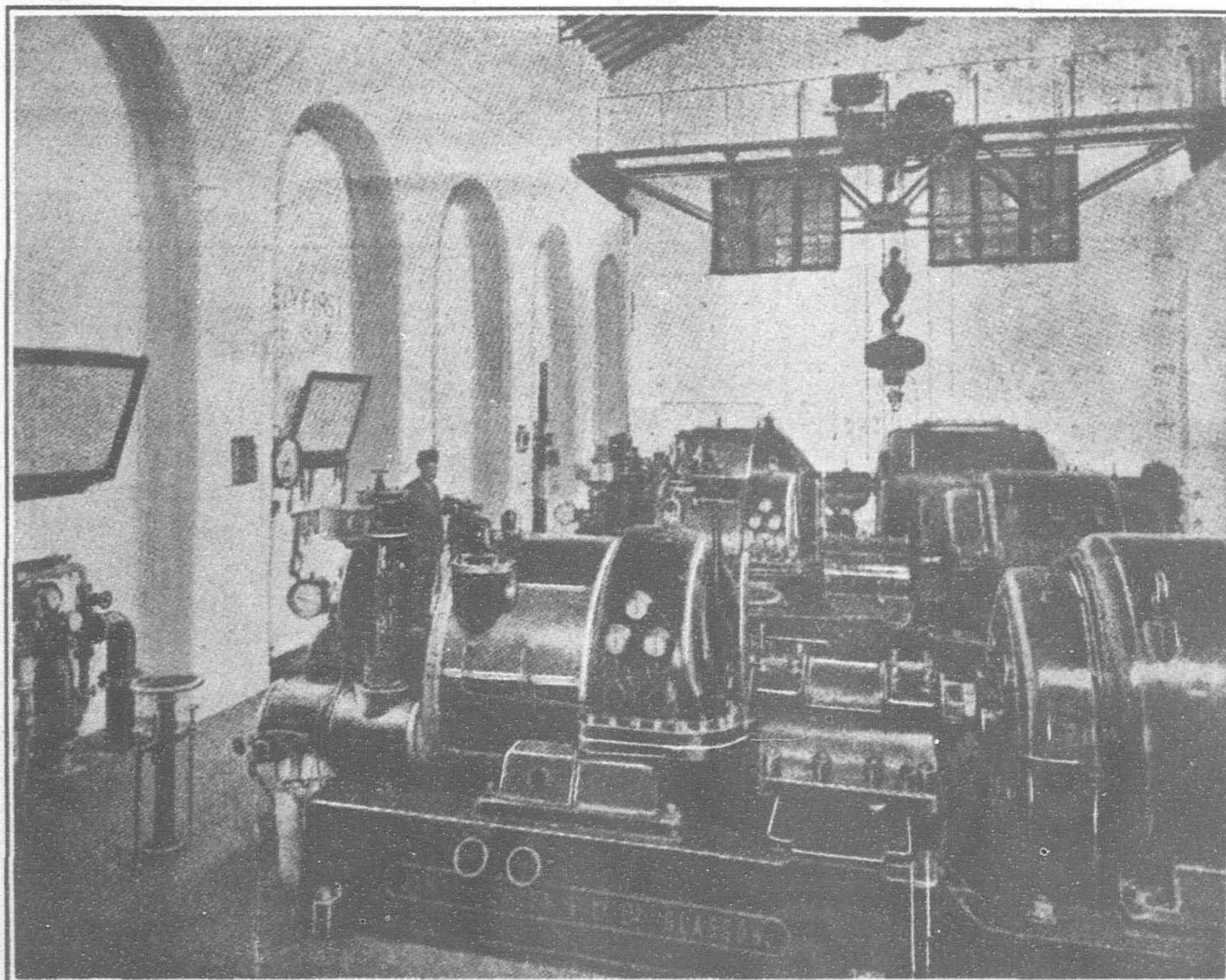
Electric heating also increased very considerably during last winter (64 per cent.), notwithstanding the fact that it is more expensive than other forms of heating, whilst applications for purposes other than those indicated above are increasing daily; for instance, electric furnaces for melting steel and brass would have been employed in Tientsin but for the adverse trade conditions, and electric domestic refrigerators are in great demand in China; larger refrigerators for cooling and drying the air for large public offices and theatres are now in use in many parts of the world where the hot damp weather calls for them. The application of electricity for the welding of parts of structural and similar work has been extended by the Department

for all new work that was formerly riveted.

The whole station was designed and its location fixed by the staff of the electricity department of the B.M.C., acting in conjunction with the council's engineer adviser in London, Mr. A. M. Sillar, a well-known authority and president of the British institute of consulting engineers. It was designed by men who have faith in the rapid and certain development of the use of this utility in Tientsin, and a corresponding faith in the future high status of this region as an industrial center. Although not to be considered in any sense as yet an industrial community, the total load has risen surprisingly in the last few years. The station is situated on the western bank of Weitze creek, at the west end of Bruce-road. The site is excellently chosen as the only place combining the facilities of large available quantities of circulating water and a convenient landing place for coal, which can be delivered by barges, fifty feet from the boiler house.



A New Boiler Control Panel.



Steam Turbo-generator House.

The Turbines and Gears of the Train Ferry-Boat "Seikan Maru No. 1"

IN the review of the work for 1926, published in "The Brown Boveri Review," January 1927, mention was made of a marine turbine installation which is more fully described in the present article.

The machines are the geared turbines for the Japanese train ferryboat "Seikan Maru No. 1" which were built in the Baden Workshops of Brown, Boveri & Co. The vessel, condenser plant, and auxiliaries were built in Yokohama (Japan) by the Yokohama Dock Co., Ltd. The vessel is designed for the Japanese Government Railways. The following table gives the leading particulars.

Overall length	..	..	..	366-ft. 0-in. or 111.7 m
Beam	..	..	..	52-ft. 0-in. ,, 15.85m
Draught	..	..	..	11-ft. 6-in. ,, 3.5 m

Gross tonnage, 2,300 tons.

Output of machines, 2 by 1,100 S.H.P.

2 boilers { grate area 2 by 76.5-ft. ² or 2 by 7.1m².
heating surface 2 by 2,900-ft. ² or 2 by 270m².

Superheaters heating surface 2 by 600-ft. ² or 2 by 56 m².

Boiler pressure, 200-lb. in²., approx. or 14 kg/cm².

Steam temperature, 120° F superheat or 250° C.

Diameter of propeller, 9-ft. 9-in. or 3.0m.

Pitch of propeller, 13-ft. 0-in. or 4.0m.

The steamer on its main deck can carry 43 wag-gons each loaded with 15 tons; four sets of rails are laid on this deck. Accommodation the captain and for officers is provided on the boat deck. Supervision of loading and unloading, etc., is carried out from the aft bridge.

The propelling machinery consists of two similar turbine sets for both propellers. At a steaming speed of 13.5 knots (25 km/h), the turbines run at 5,060 r.p.m. Double reduction transmission gear

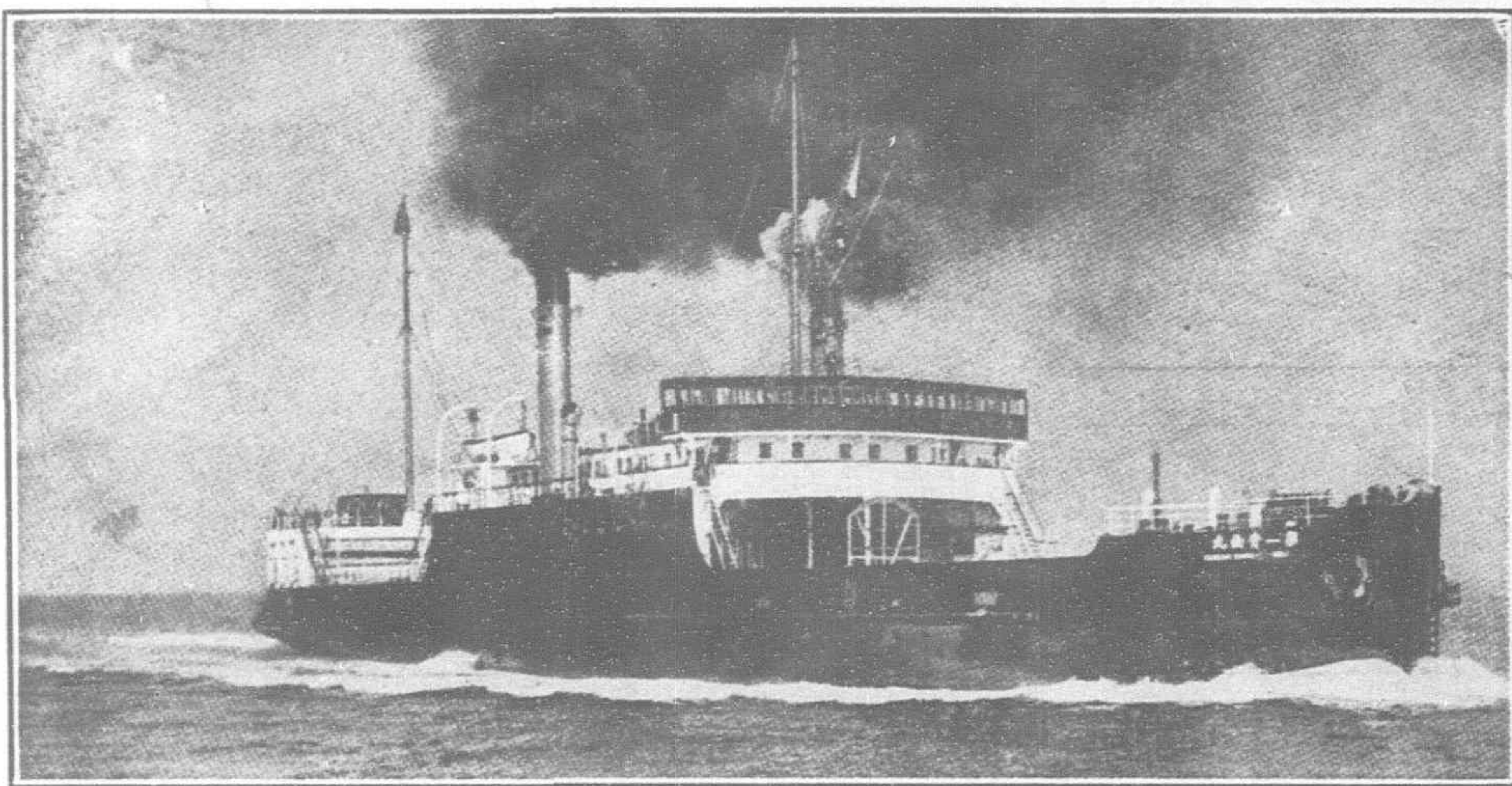
used, the propeller running at 135 r.p.m. Ahead and astern turbines are mounted in one cylinder. The former in a combined impulse and reaction turbine of the well-known Brown Boveri type. The astern turbine, comprising one two-stage impulse wheel, is mounted on the exhaust end. In the ahead turbine, connections are provided for introducing the exhaust steam from the auxiliaries and also the leakage steam from the dummy piston.

The double reduction gearing comprises helical wheels having a ratio of 37.4:1. The pinion of the first gear, rigidly coupled to the turbine shaft, drives the two wheels mounted on the intermediate shaft; in their turn these gear wheels are coupled to the pinion of the second gear by way of a torsion shaft. The axial thrust set up by the helical teeth of the first pinion is balanced out by the turbine thrust, while the thrust of the large wheel of the second gear is

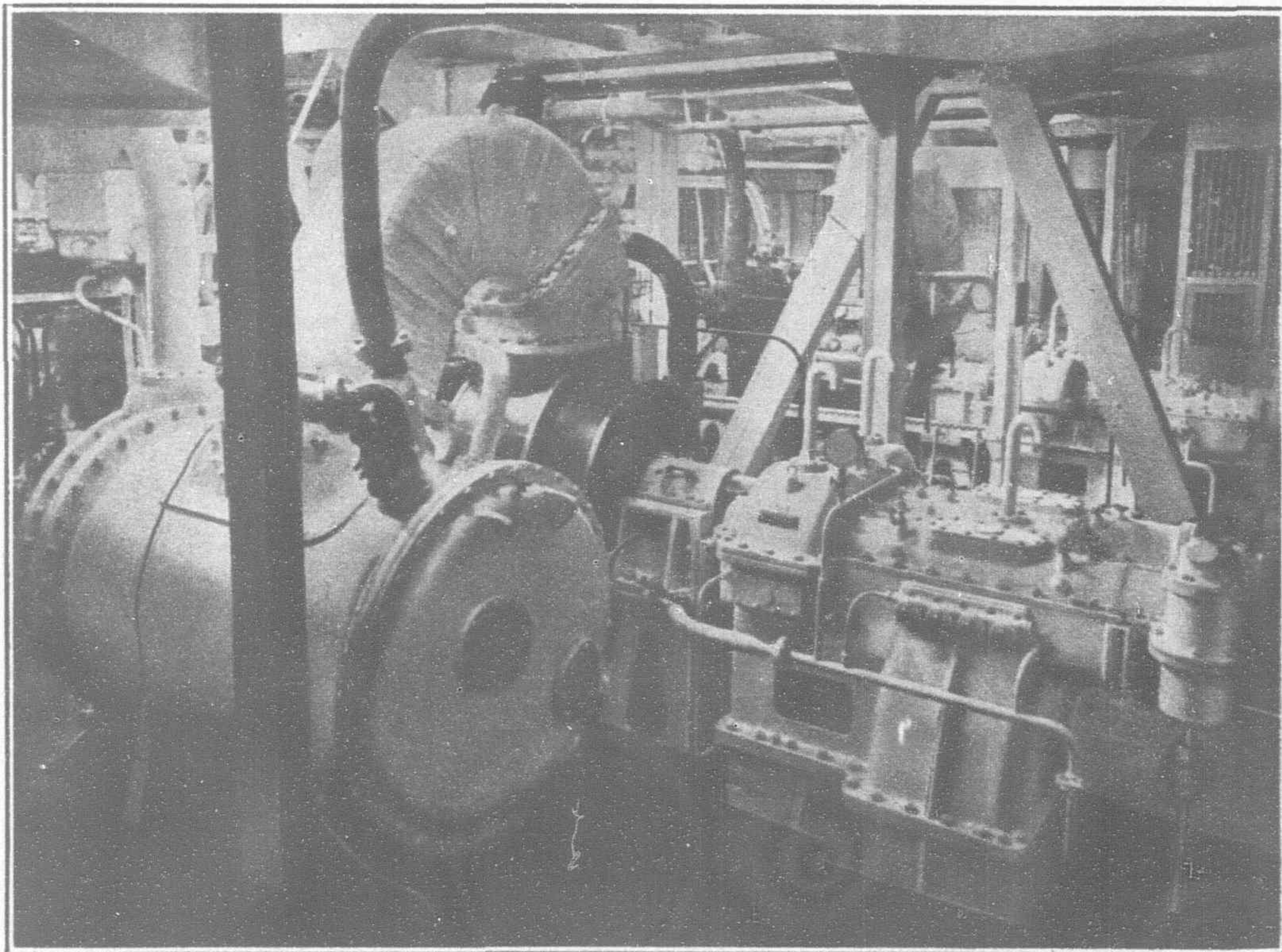
balanced by the propeller thrust. The axial thrusts of the wheel and pinion on the intermediate shaft are mutually balanced. This method of balancing out the thrusts is patented by Brown, Boveri & Co. The gear casing is divided in the planes of the first and second gears. On the stern of the gear casing, the propeller-shaft bearing is cast on. Aft of the gear casing, a turning gear is mounted on the intermediate shaft; this gear is operated by hand or by an electric

motor. The other intermediate shaft carries a speed governor which automatically adjusts the speed to any predetermined value. At the forward end of each turbine, the safety governor is mounted. This governor cuts off the steam supply if the turbine speed exceeds the maximum admissible value by about 10 per cent.

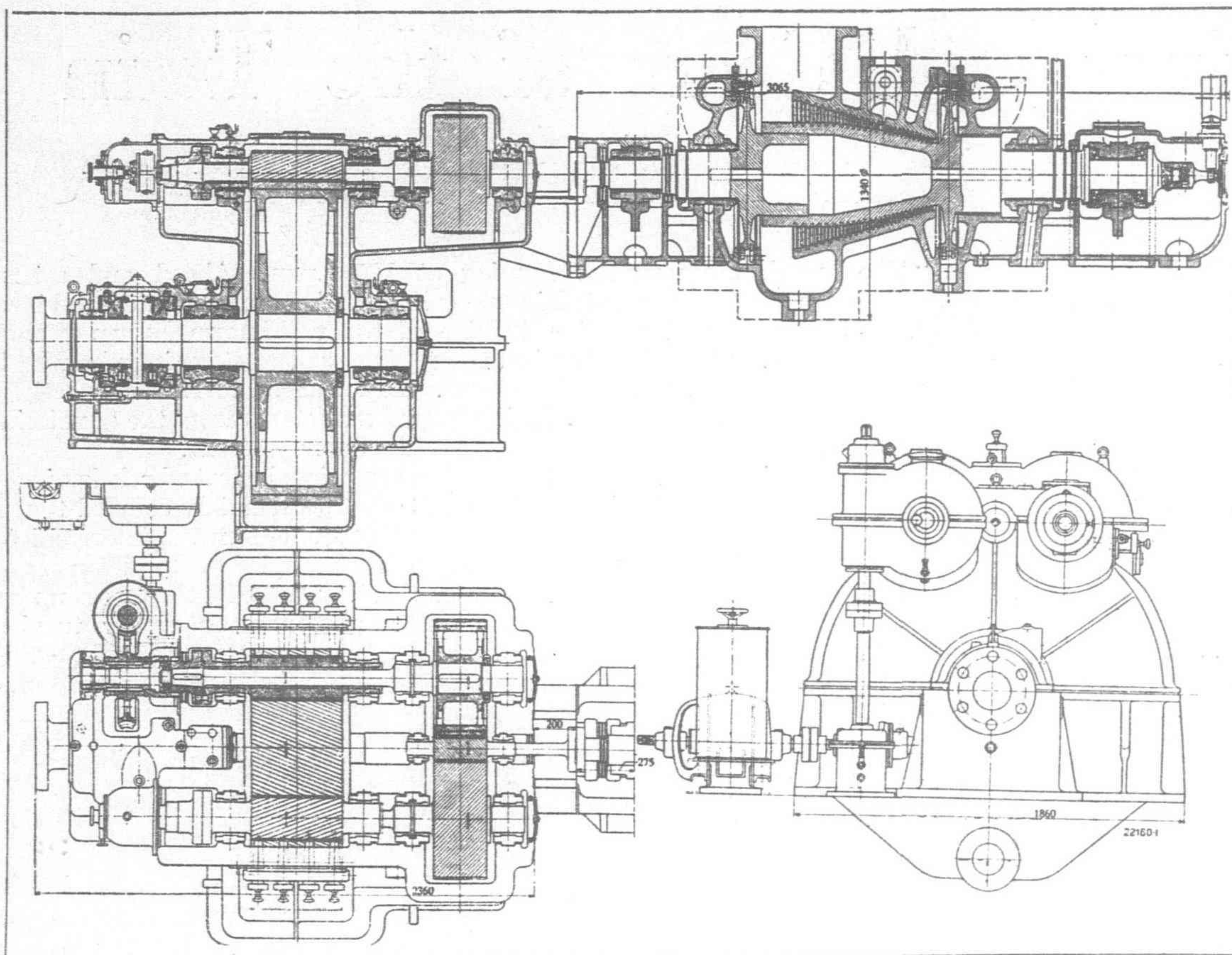
The surface condensers are mounted at the sides of the turbines. Each condenser is provided with a circulating pump and an air pump. The oil system for governing and lubricating the bearings and gears is common



The Train Ferry-boat "Seikan Maru No. 1" of the Japanese Government Railway



View on Board, as seen from Port Side of the Gear



Turbine and Gears of the Japanese Ferry-boat "Seikan Maru No. 1"

In November, 1926, the acceptance tests for all guaranteed conditions, including the steam consumption of 5.00 kg/S.H.P. (11-lb.) at 13.00 kg/cm² abs and 250° C with a condenser vacuum of 93 per cent., were carried out to the complete satisfaction of the purchasers. Since December, 1926, the "Seikan Maru No. 1" has been in regular service as a train ferry-boat between Hakodate and Aomori, about 100 km apart.

The results of the operation have shown that even with the unfavorable conditions arising from the small output of only 1,100 S.H.P. per shaft, turbines are quite able to compete with reciprocating engines or even Diesel engines. In respect of weight and space required turbine drives are far superior to the two other types of plant. The total weight of the turbines and gears is about 36 tons or only about 16 kg/S.H.P.

In conclusion it may be mentioned that an illustration of the set in the testing department at the Baden Works is shown in the "Brown Boveri Review," January, 1927.—J. BAASCH(J.R.L.)

to both sets. It comprises two oil pumps, two oil filters, two coolers, one reservoir, and the pipe-lines. Usually only one pump, one filter and one cooler are in service. As well as two feed pumps and various pumps for special purposes, the vessel is fitted with a dynamo driven by a reciprocating engine and also a Brown Boveri turbo-dynamo having an output of 12 k.w.

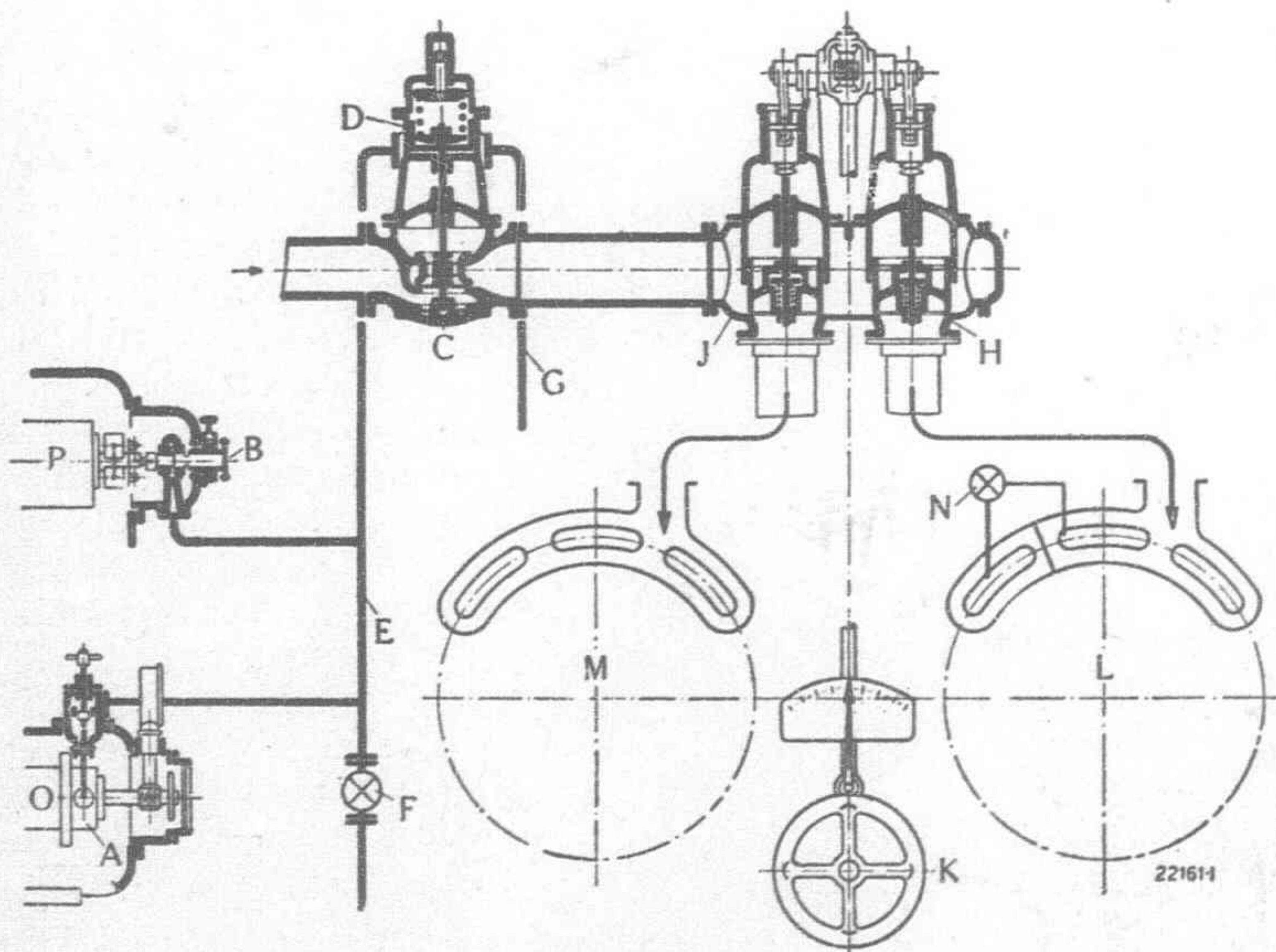
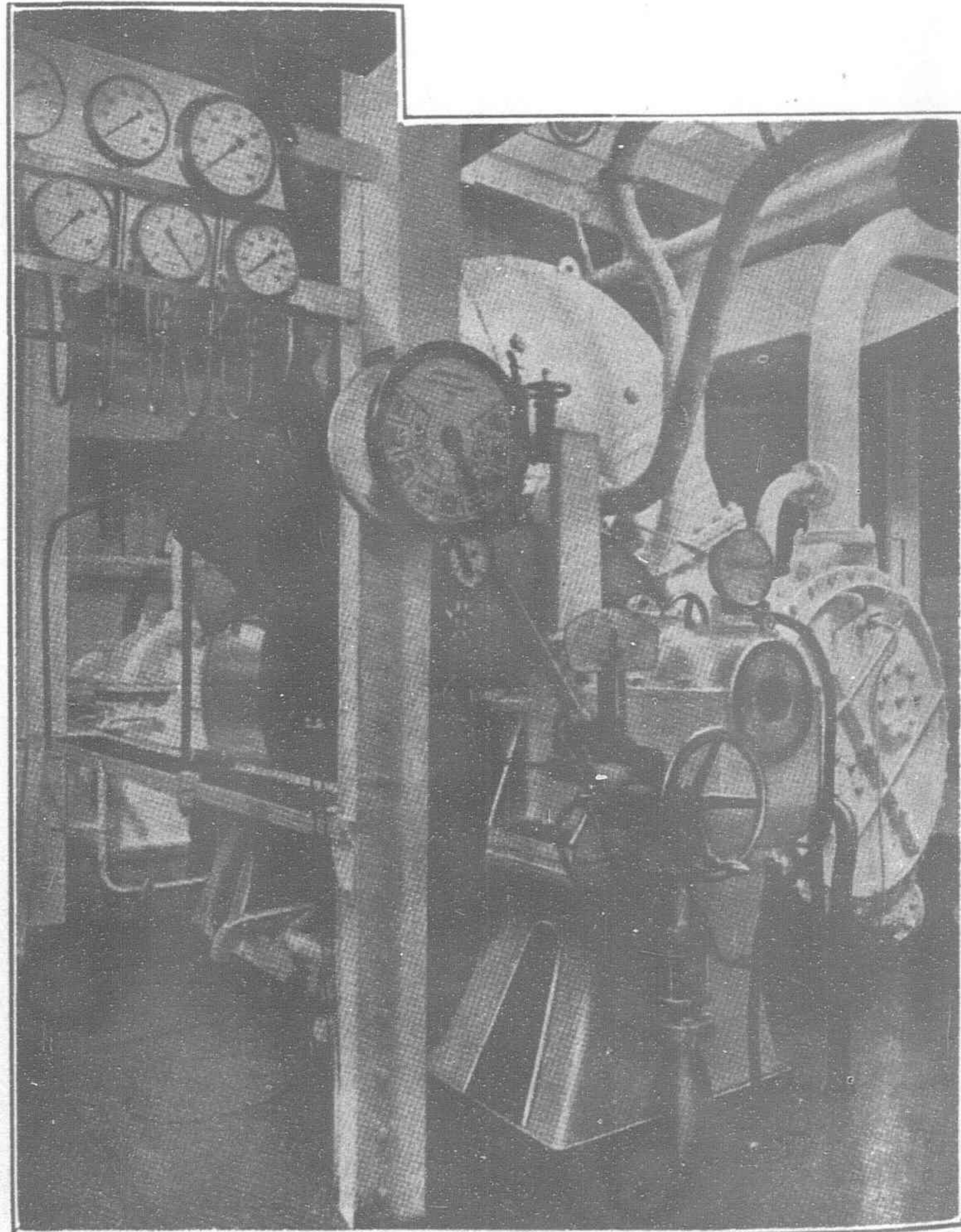
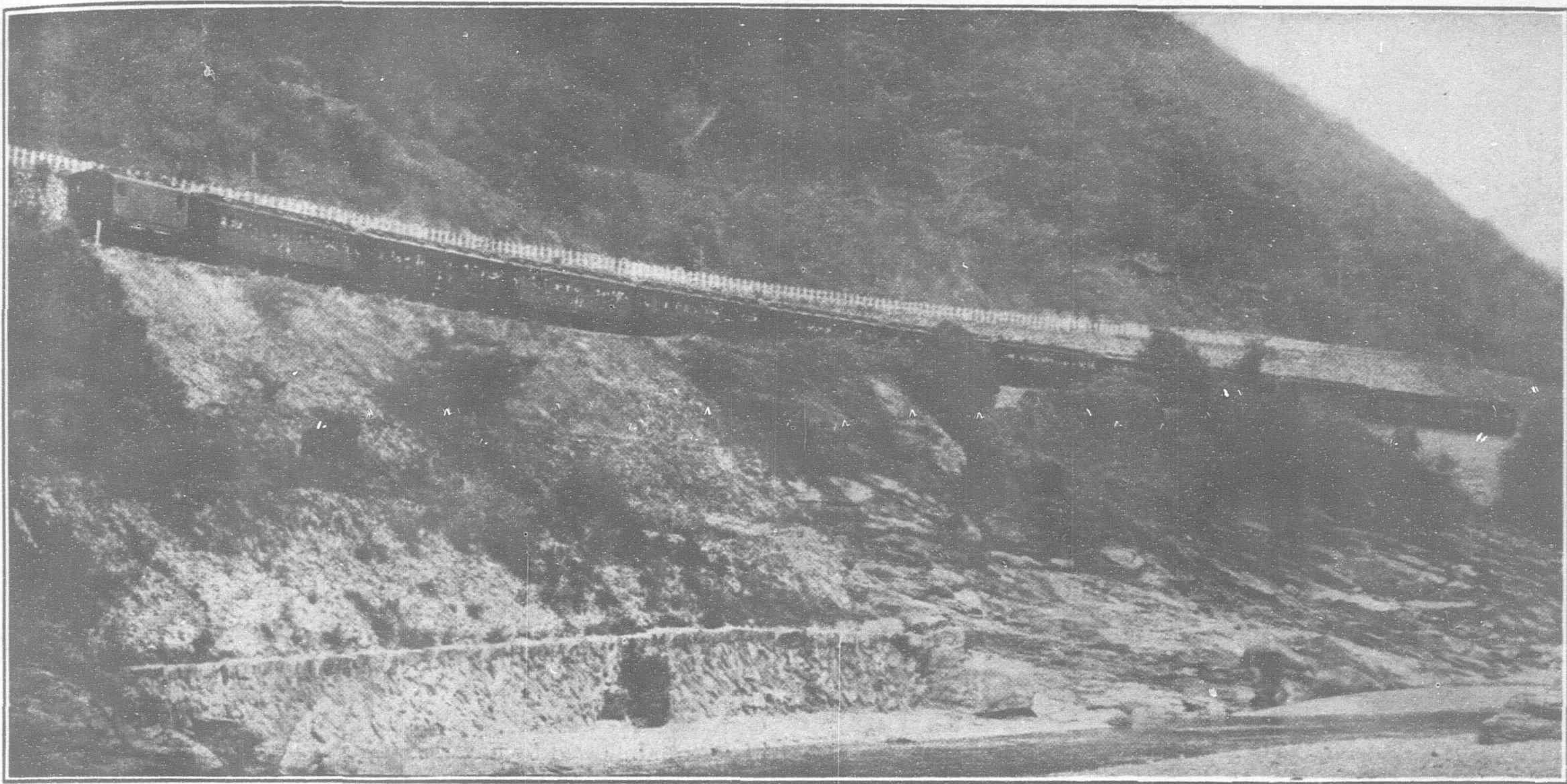


Diagram of the Oil Governing System

- | | |
|--|------------------------------------|
| A. Safety governor. | H. Ahead manoeuvring valve. |
| B. Speed adjuster. | J. Astern manoeuvring valve. |
| C. Regulating and quick closing valve. | K. Handwheel for valves H and J. |
| D. Oil piston. | L. Ahead turbine. |
| E. Oil pipe-line. | M. Astern turbine. |
| F. Oil regulating valve. | N. Overload valve. |
| G. Oil return main. | O. Turbine shaft. |
| | P. Intermediate shaft of the gear. |



Control Station for Port Turbine



12 Coach Train being hauled up a 1 per cent. Grade on the Chichibu Railway by "English Electric" Locomotive

"English Electric" Traction Equipments in Japan*

AS is well known, considerable progress has been made in Japan in electrifying main line railways, interurban railways and city lines. Previous to the war, Messrs. Dick, Kerr & Co. had a well-established reputation in that country for tramway equipments, and in the development of electric traction that has taken place since. The English Electric Company has had a considerable share. In the limited space now available it is impossible to give more than a brief reference to the individual systems, but the bare summary is a sufficiently imposing testimony to the tremendous progress that Japan is making; at the same time, it is satisfactory evidence of the efficient service rendered by this Company's camshaft controller and motor equipments, under conditions which differ, in many respects, from those ruling in this country.

The principal order executed in recent years has been the thirty-six main line locomotives for the Japanese Government Railways, which have been described in previous issues of this Journal. It is proposed, in the present article, to refer to the numerous equipments supplied to privately owned lines.

In every case the control equipment supplied has been standard "English Electric" camshaft control, the principles of which remain the same whether applied to locomotives, motor-coaches or light multiple-unit tramway equipments. In another part of this number the 1,500-volt under-car type of camshaft equipment is described, and this description

applies generally to all the 1,500-volt motor-coach equipments which have been supplied to Japan. The 600-volt equipments are very similar, except that the trolley voltage is used directly for the control without the employment of a motor-generator.

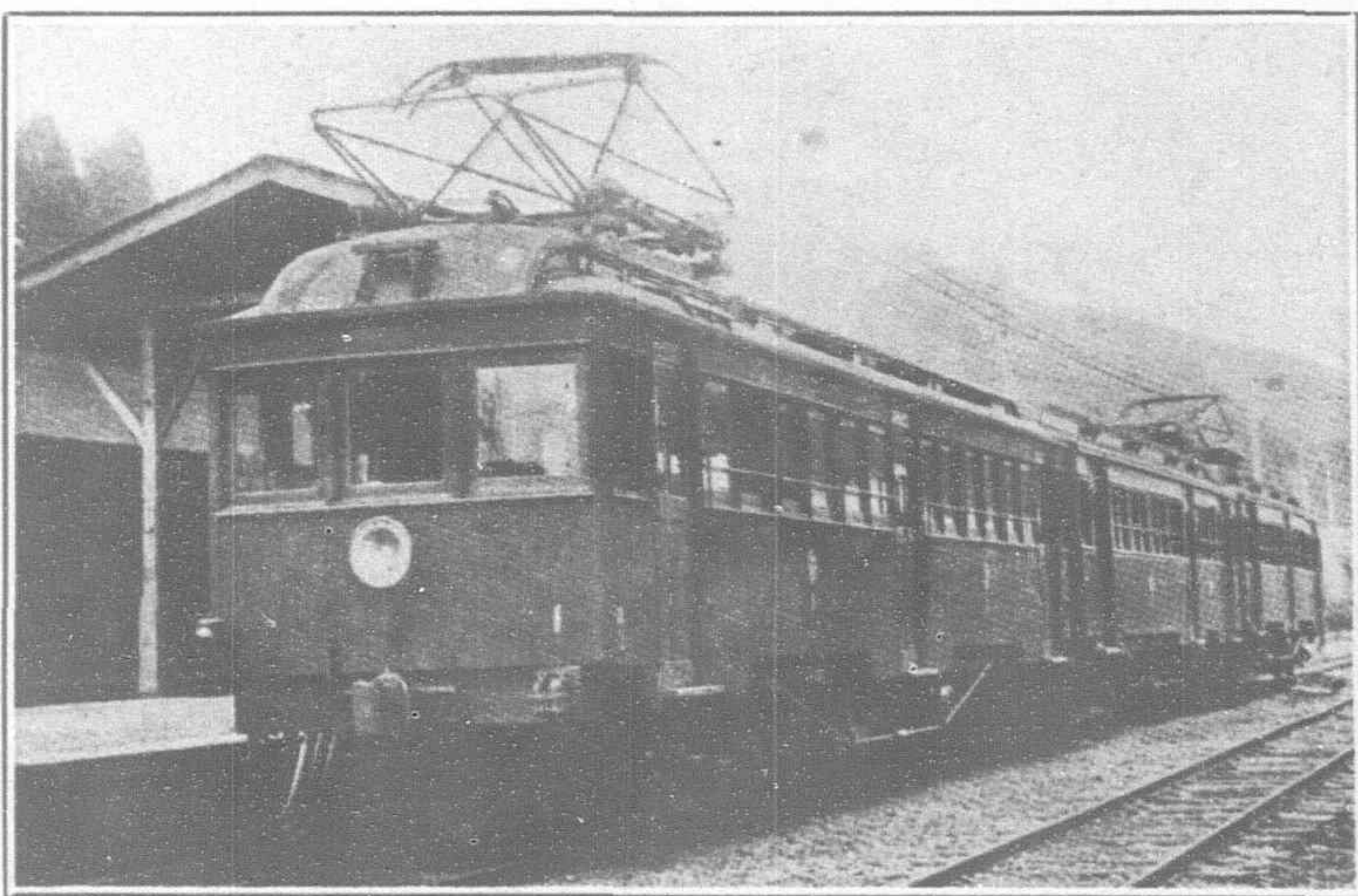
Motor-Coaches

Keihan Denki Tetsudo K.K. and Shin Keihan Tetsudo K.K.

The first mentioned Company has been operating an electric service between Osaka and Kyoto since 1909, when the Power Station and Sub-station plant and the Rolling Stock Equipments were supplied by Dick, Kerr & Company. Subsequently numerous repeat orders were received for standard coach equipments, each consisting of four 50 h.p. motors with direct manually operated control. In recent

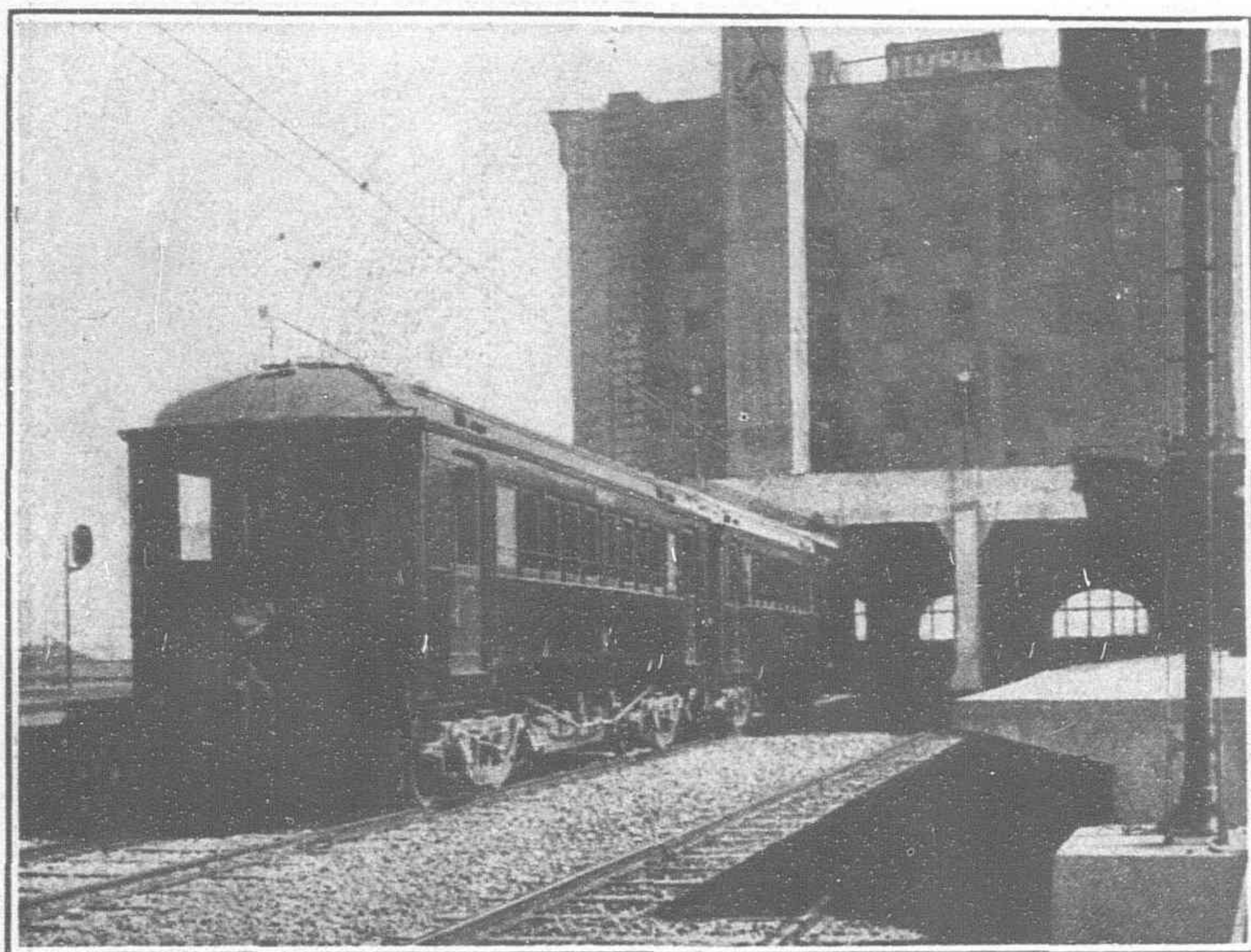
years their new rolling stock has been equipped on the multiple-unit system and, so far, 20 sets of "English Electric" Camshaft Control Equipment have been supplied, each consisting of four 72 h.p. motors and control gear.

From the allied Company, Shin Keihan Tetsudo K.K., orders have been received for 10 equipments of the latest type, each comprising four 60 h.p. motors and control equipments for operating on a 600-volt line. This system, which connects Juso and Senri, is of interest since the Company contemplates converting it to 1,500 volts, and the coach



3-Car Motor-Coach Train on the Ome Railway; 1,200/1,500 volts D.C.

* "The English Electric Journal."



2-Car Motor-Coach Train on the Shin Keihan Railway

equipments have been arranged to facilitate easy conversion to meet future requirements.

Ome Tetsudo K.K.

The first camshaft equipments were those supplied to the Ome Tetsudo K.K., whose first order comprised four control equipments and motors; repeat orders have been received for a further four equipments. The line voltage of this system is 1,200 D.C., but is presently to be raised to 1,500 volts. The normal composition of the train consists of one motor-coach and a trailer, but sometimes two trailers are used, and on special occasions a train is made up of two complete units.

The motors, four of which are mounted on each motor car, are connected in pairs in permanent series, and each is rated at 60 h.p.

Nagoya Denki Tetsudo K.K.

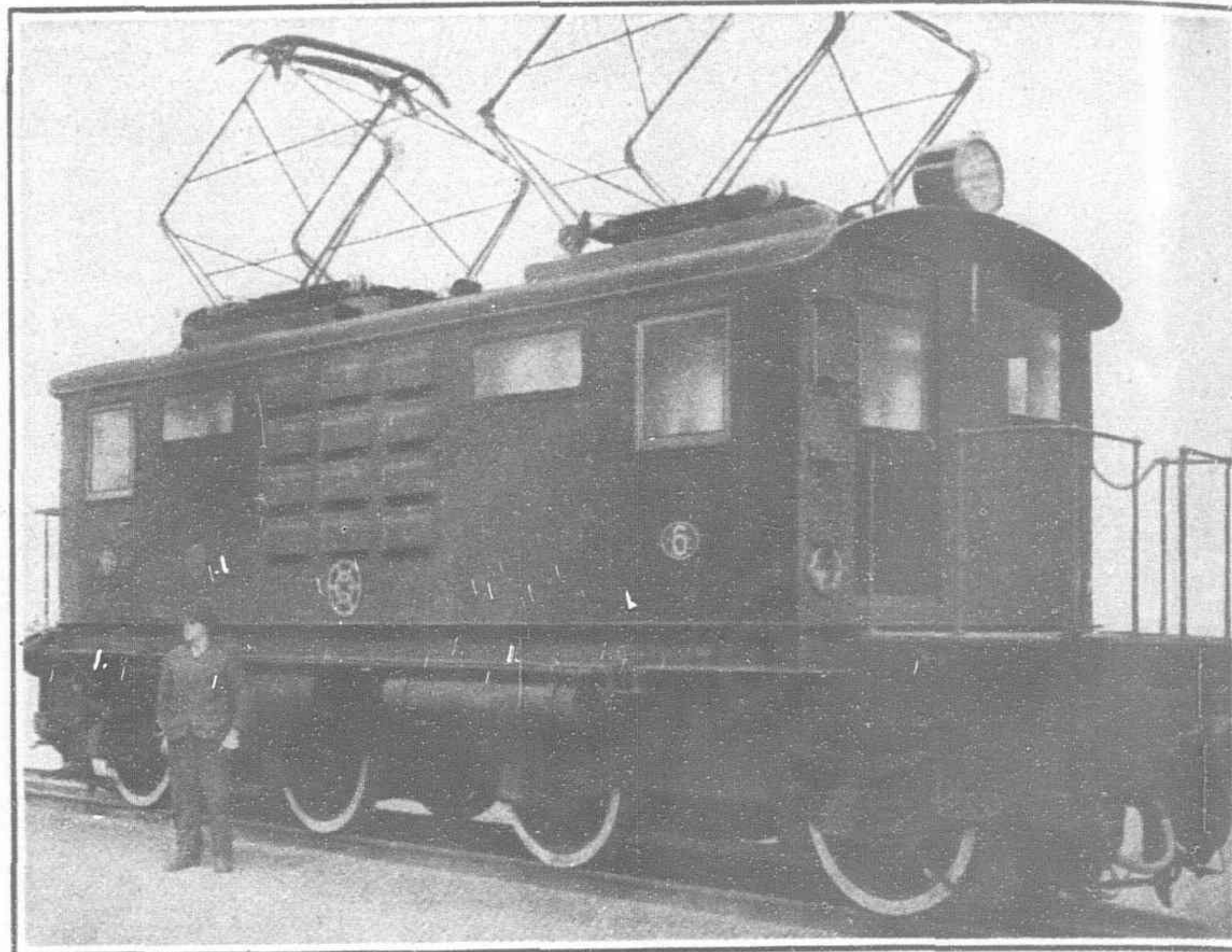
This railway has an electrified line running between Nagoya, Iwakura and Ajiyama, operating on 600 volts D.C. The normal train make-up is a two-car unit, consisting of two motor cars.

The first equipments supplied consisted of ten sets of control equipment, each operating two 84 h.p. motors. The cars are, of course, equipped for multiple-unit operation.

This system operates a heavy suburban traffic, and the average mileage run per car is 50,000 miles per annum. After the first equipments had been in operation for about eighteen months, a repeat order was received for six sets of control equipment, each operating four 84 h.p. motors, the motors being built by the associated company, Messrs. Toyo Denki Seizo K.K. This year the associated company received a further order for ten complete equipments, which they have built to the same designs as those supplied on the second order.

Keisei Denki Kido K.K.

This Railway Company operates a system from Oshaige to Tsadanuma, with a further extension to Narita. The operating pressure is 600 volts on the first portion of the line, and 1,000 volts on the second portion. The service on these lines is very severe, each car averaging approximately 65,000 miles per annum.



One of the 1,200-volt Locomotives supplied to the Chichibu Railway

For operating on the 600-volt section, The English Electric Company supplied six four-motor equipments, each motor being of 75 h.p. followed by a repeat order for eleven similar equipments. The associated company in Japan subsequently received an order for twenty-five equipments to operate on both 600 and 1,500 volts, and are manufacturing these to "English Electric" designs.

Kongozan Denki Tetsudo K.K.

Two orders have been executed for this Company, the first for three and the second for four camshaft control equipments, each operating four 60 h.p. motors on a 1,500-volt line.

Kagamigahara Tetsudo K.K.

On different orders a total of eight control equipments have been supplied, each operating four 60 h.p. motors on a 600-volt supply.

Toyokawa Tetsudo K.K.

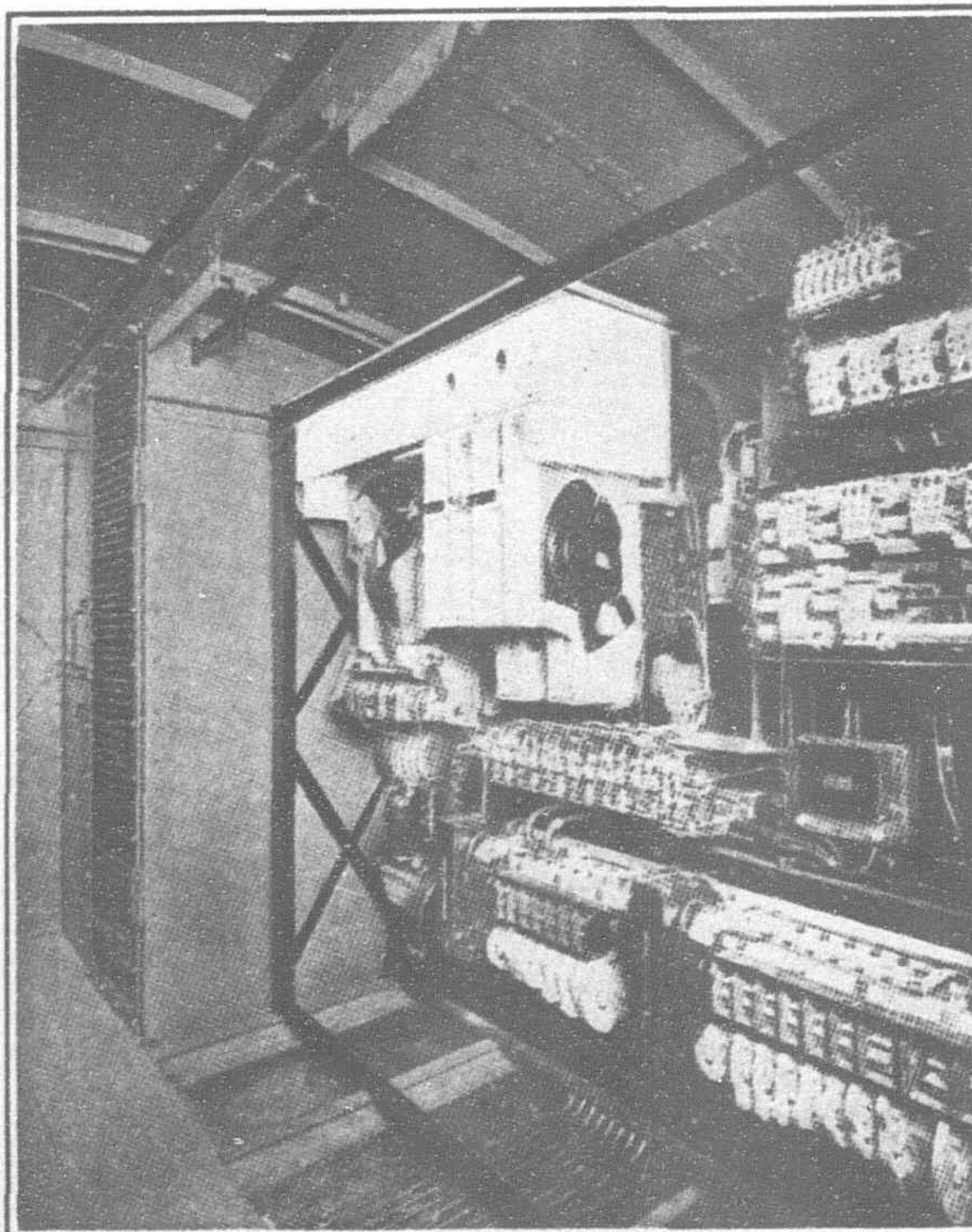
This Company's lines operate on 1,500 volts, and six control equipments have been supplied, each controlling four 80 h.p. motors built by the associated company in Japan, and a further three equipments, each controlling four 95 h.p. motors, built at this Company's Preston Works.

In addition to those already mentioned, the following railways have camshaft equipments in use or on order:—

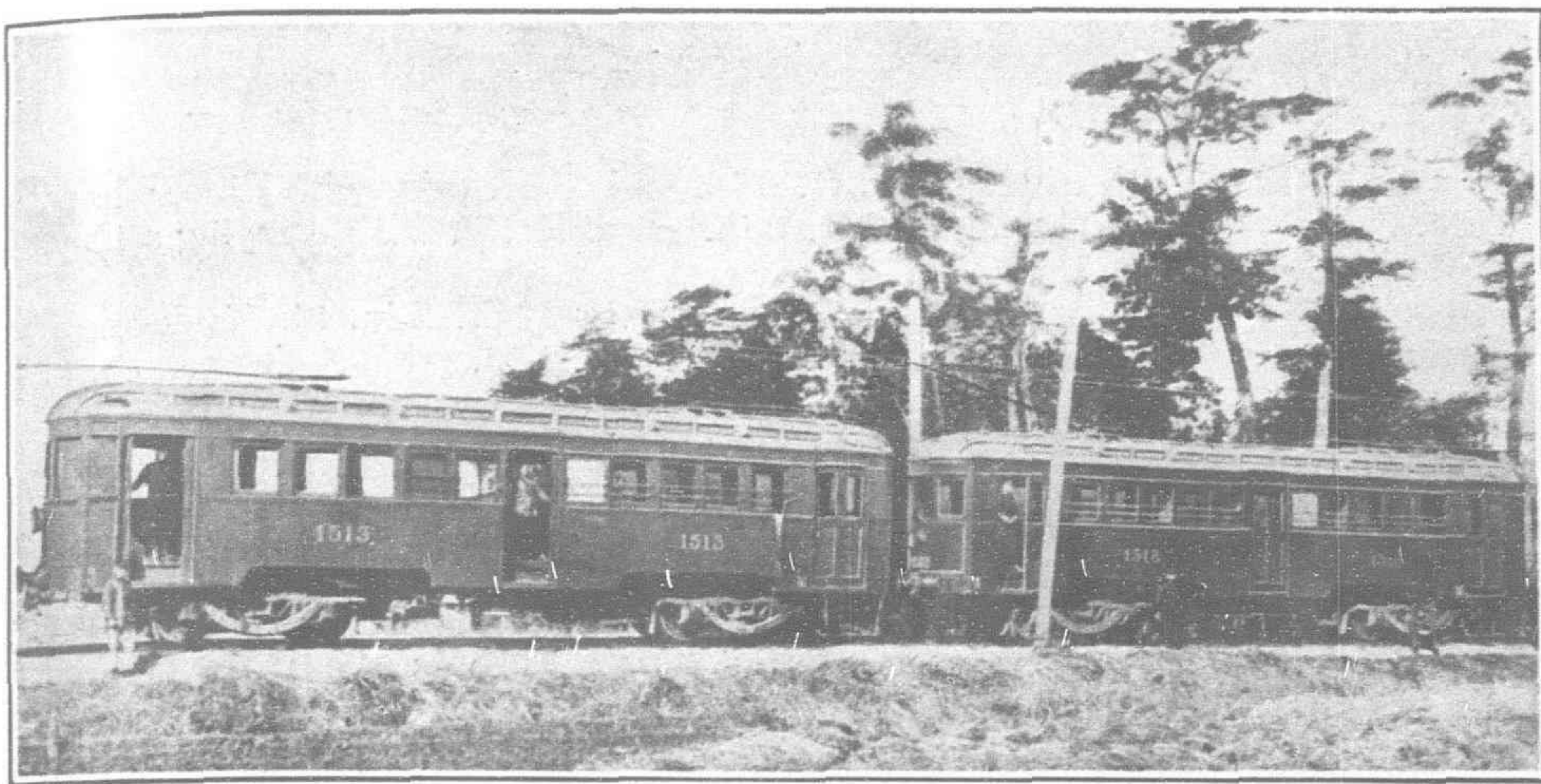
Tobu Tetsudo K.K.	Ten equipments, each of four 130 h.p. motors on 1,500 volts.
Tanigumi Tetsudo K.K.	Ten equipments, each with two 60 h.p. motors on 600 volts.
Mino Denki Kido K.K.	Ten equipments, each of two 50 h.p. motors on 600 volts.

Locomotives

Many of the privately owned railways in Japan which are not purely suburban services carry a considerable amount of freight, and locomotives are, of course, employed for this work, "English Electric" locomotives are now working on the lines of three of these systems.



Main Control Gear on a Locomotive of the Chichibu Railway



2-Car Motor-Coach Train on the Nagoya Railway

Toyokawa Tetsudo K.K.

At the same time that the first six sets of motor-coach equipment were ordered by this Company, two electric locomotives were constructed. These are of the central cab type, the superstructure being mounted on two articulated bogie trucks, with all buffing and hauling stresses carried through the trucks. Each locomotive is equipped with four 80 h.p. motors connected in pairs in permanent series, and operated by standard locomotive camshaft control.

The locomotives had to be as light as possible and were, therefore, designed with a total weight of 25 tons distributed equally on the four axles.

The whole of the camshaft control equipment is contained in one of the sloping ends of the locomotive, while the other end houses the motor-generator for supplying low-tension current, the air brake compressor and the auxiliary switches. The central cab is equipped with two driving positions with all the necessary auxiliary control switches, driver's brake handles, etc. Westinghouse A.M.M. air brakes are fitted.

These locomotives have been in operation for nearly two years, and recently a further order was obtained for the camshaft control equipment of a larger locomotive of the box type, the mechanical parts of which are being built in Japan. The general arrangement of this locomotive will be very similar to that of the locomotives for the Chichibu Tetsudo K.K. described in the following paragraphs.

Chichibu Tetsudo K.K.

Two 42-ton locomotives have been built for the above railway. As will be seen the locomotive superstructures are of the box type and mounted on two articulated, plate frame, two-axle bogie trucks. The draft gear is of the M.C.B. type standardized for the Japanese railways, and is fixed on to the outer ends of each bogie. The superstructure rides on the bogie centres through spherical type lubricated seatings.

Each locomotive is equipped with four D.K. 98B motors, each of 200 h.p. connected in pairs in series for operation on a 1,200-volt supply.

The superstructure is divided into a driving compartment at each end, and a central compartment. The latter is arranged with a straight passage-way from end to end; on one side of this is the enclosed high-tension control compartment housing the camshaft control gear, and on the other, an enclosed compartment containing the main resistance. A 2-KW. motor-generator set for supplying low-voltage control, and two compressors, are also located in the central compartment. Westinghouse 14 E.L. type air brakes are fitted.

The current collector gear consists of two air operated pantographs, one of which is normally used in service, the second being for emergency purposes.

The locomotives are arranged for working in multiple-unit.

Ome Tetsudo K.K.

The Ome Tetsudo K.K. which has been mentioned as being the first Japanese railway to use camshaft control, has also in operation of a 36-ton locomotive, which generally is very similar to those of the Chichibu Tetsudo K.K.

This unit is arranged to operate on 1,200 and 1,500 volt lines, and is equipped with four D.K. 91 motors, each of 136 h.p., connected in pairs in series. It has now been in operation for about six months with very successful results. As in the case of the locomotives for the Toyokawa Tetsudo and Chichibu Tetsudo

K.K., the locomotive was completely equipped in England and shipped in three main portions, namely, the superstructure and the two trucks. This enabled the locomotives to go into operation with the minimum amount of erection work in Japan, and the Ome Locomotive in particular was put into full operation as soon as the superstructure had been mounted on the trucks and connected up.

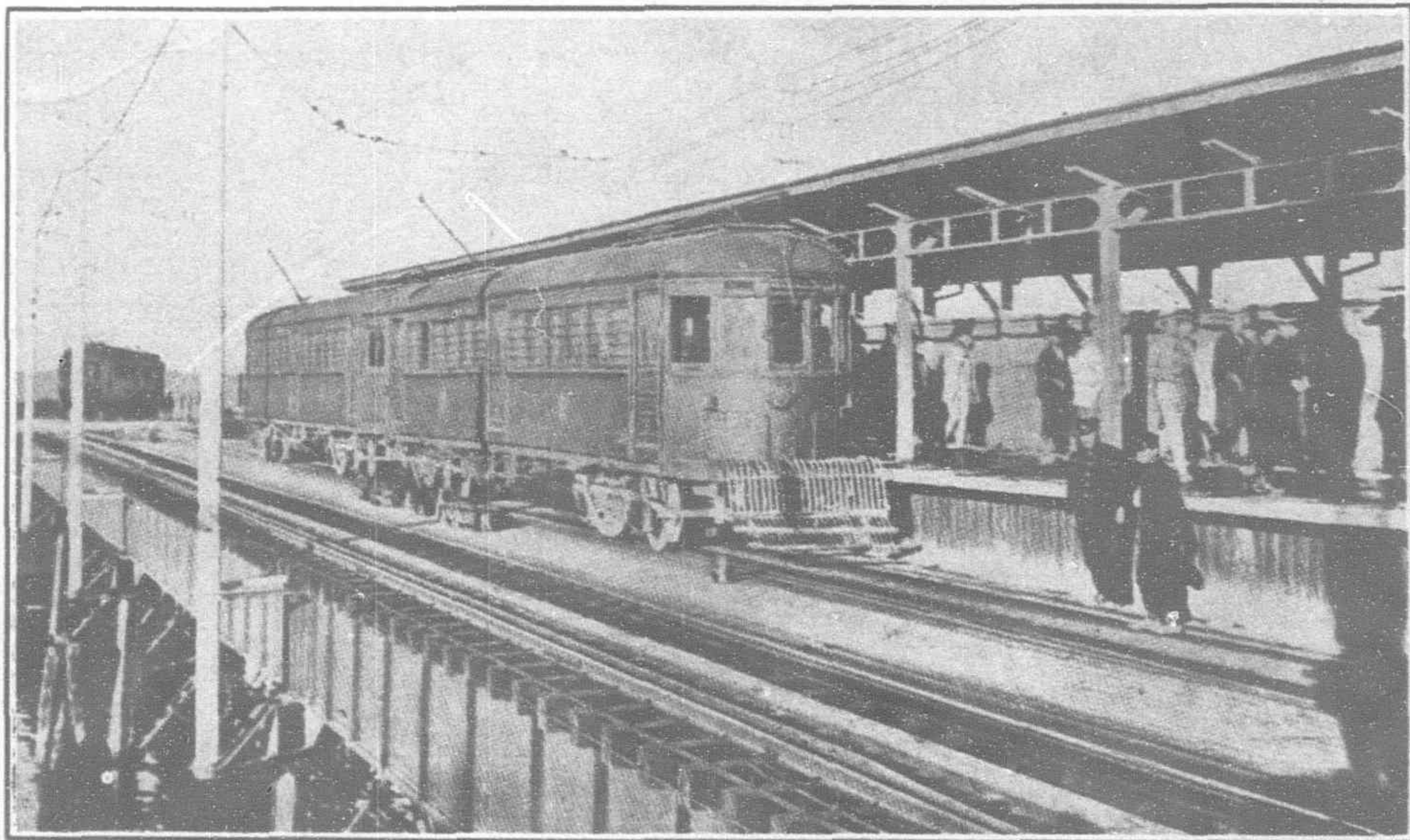
The results obtained were so satisfactory that a further locomotive of similar type has just been ordered, and is now in course of construction. This locomotive, however, while being capable of working in multiple-unit with the first locomotive, will be arranged for rheostatic braking, as the Ome line practically consists of one continuous grade from end to end, and is, therefore, eminently suitable for electric braking.

Shin Keihan Tetsudo K.K.

Three camshaft control equipments are under construction for locally built locomotives on the above railway. The layout of these locomotives will be generally similar to those of the Ome and Chichibu Tetsudo K.K.

The principal feature to be noted about the construction of all the above locomotives is that the camshaft control equipment is mounted on detachable frame-work in two portions, one frame taking all the main control gear and the smaller frame taking the auxiliary control gear. These frames can be lifted in and out of the locomotives bodily through detachable portions of the roof.

This type of locomotive is proving very popular in Japan, and its undoubted simplicity and reliability should lead to a considerable extension of its use.



Motor-Coach Train at a Terminal Station of the Keihan Railway

Bucyrus Announces A New 1 $\frac{1}{4}$ Yard Diesel Shovel

UTILIZING again the greater power and economy of the Diesel engine, the Bucyrus Company, the first builder of Diesel-driven excavators, has just placed on the market its E-2 1 $\frac{1}{4}$ yard shovel, dragline, clamshell and crane, designed for excavations that require more working range and dipper capacity than is offered by the Bucyrus 1-yard convertible Diesel shovel, announced a few months ago.

Examination of the new E-2 reveals a number of pronounced advantages both to operator and owner. The machine is unmistakably well designed in that its parts are simple and few in number which makes it easy to take care of, cuts down delays from breakage and insures low upkeep cost. The sturdiness of the E-2 is the direct result of this simplicity, combined with a proper choice of the steels used in its construction.

High-Speed Digging Cycle

The machine is built on the proven Bucyrus plan of a high-speed digging cycle. The Bucyrus two-part hoist, together with the Atlas-Bucyrus four-cycle 9-in. bore by 12-in. stroke Diesel engine operating at 350 r.p.m. gives the E-2 dependable power. A safety clutch protects the engine against overloads and guards against breakage. Simple and rugged engine design, and the protection of positive lubrication, should assure long life and uninterrupted operation as supplements to the low fuel consumption.

Identifying it completely as a Bucyrus product, the E-2 had the box-girder type boom, patented rope thrust outside dipper handles and caterpillar mounting.

Capacity and Working Ranges

The Bucyrus E-2 is offered in 2 combinations of boom and dipper handle, i.e.

length of boom 26-ft. 0-in. and 29-ft. 6-in. with dipper handles 15-ft. 0-in. and 17-ft. 0-in. respectively, both carrying a 1 $\frac{1}{4}$ yard bucket.

Dumping height ranges from 13-ft. 2-in. at 40 degrees for the standard shovel to 22-ft. 11-in. at 60 degrees for the high lift.

Dumping radius reaches a maximum of 29-ft. 11-in. on the high lift at 45 degrees. Cuts below grade are possible. The maximum level floor is 21-ft. 9-in. in radius and the maximum cutting radius is 33-ft. 3-in. A bank 31-ft. 2-in. high can be dug.

The E-2 is economically convertible into a dragline, clamshell or crane without any change in the main machinery beyond their removal of lagging from the main drum and the addition of an air clutch for the hoist in changing from a shovel to a dragline.

As a dragline the E-2 is offered with 1 cubic yard bucket on a 45 foot boom, and a $\frac{3}{4}$ cubic yard bucket on a 50 foot boom. The Diesel Dragline in very popular ex-work in remote and

this size has proven a

cavator especially for

inaccessible regions.

Equipped as a

clamshell, the E-2 has

two boom and bucket

combinations, neces-

sitating only a change

of bucket for orange

peel excavation, and

fitting it for loading

and unloading cars,

for loading hoppers

and for handling all

kinds of bulk materi-

als. As a crane, the

different boom com-

binations give the E-2

a lifting capacity as

great as 22,750 pounds,

and a working radius

as large as 53 feet.

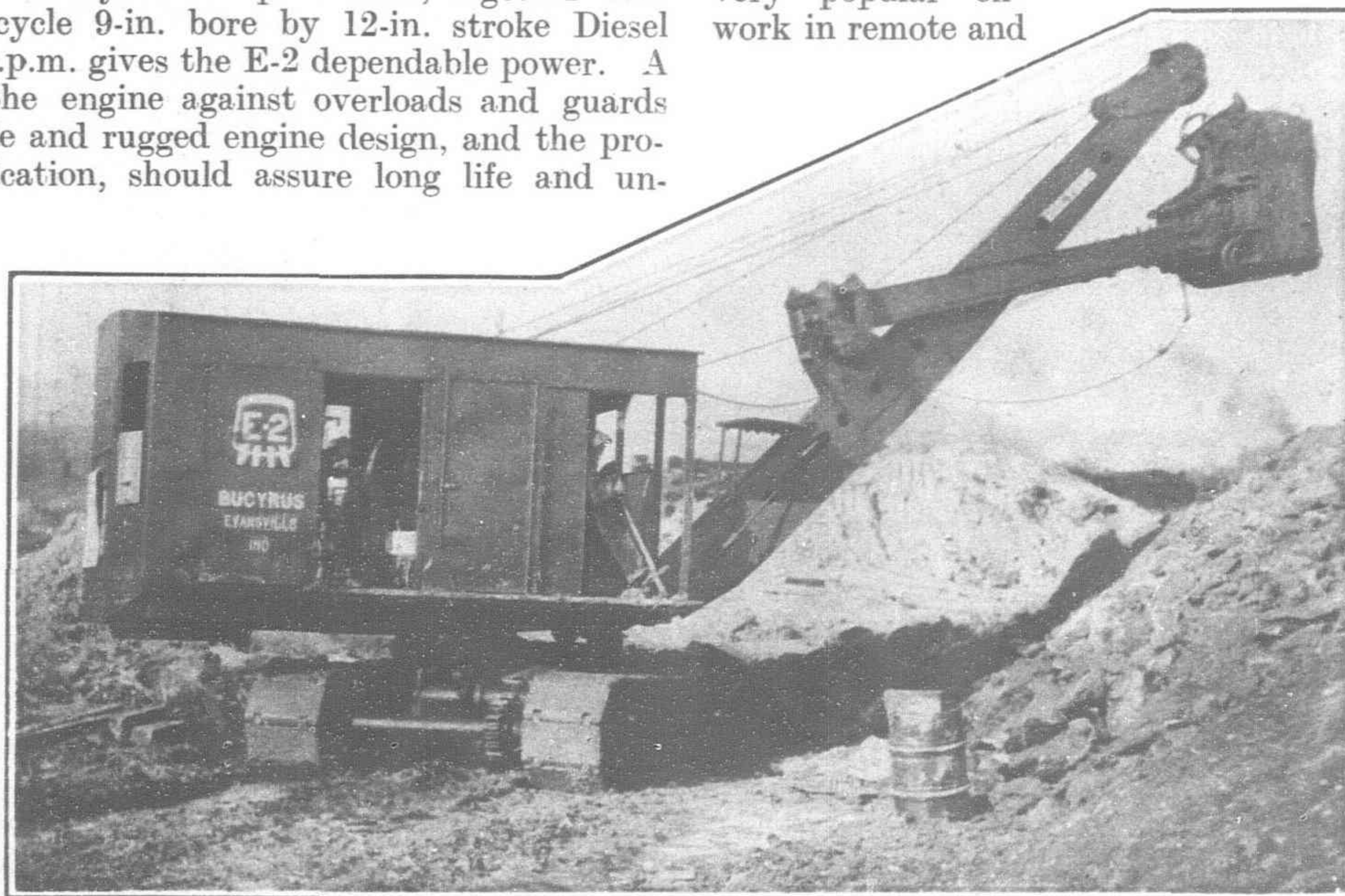
Bucyrus adaptability

is still further display-

ed in the uses of the

E-2 as a pile driver

and sewer shovel.



Bucyrus E-2 Universal Shovel-Diesel Driven

Preliminary Investigation and Estimate of the Kaomi-Chefoo Railway

(Continued from page 404).

Nanhui, and northern part of Kiangsu through connections with Tsin Pu and Lung Hai railways. Pingtu produces hat straw and peanuts. The products of Sahochen, the richest town of Shantung, can be shipped to the outside from Pingtu. Laiyang produces dry fish and lobsters, various kinds of fruits, especially pears, peanuts, and hat straw. Hsihsia produces silk, peanuts, fruits, and all kinds of grains. The freight on peanuts alone will be able to support the railway without loss. Most people of Tengchowfu and Laiyangfu are traders in outside cities and towns. This insures an abundance of passenger service.

The Kaomi-Chefoo Railway runs through a comparatively plain country, no heavy cut and fill being necessary. No tunnels are required. Main bridges should be built across the Kiao Ho, half way between Kaomi and Pingtu, Hsiao Ku Ho, east of Pingtu, and Chin Ho, near Fusang. Small bridges should be built across Wu Lung Ho, branch of Wu Lung Ho, west and east branches of Ta Ku Ho, Si Ta Ho, Chu Ho, and Huo Ho. The track should be of standard gauge.

Estimate of Cost of Road and Equipment :-

Total Cost of Road and Equipment, \$20,000,000	\$	Bridge Work ... 2,200,000
Land ... 650,000		Line Protection ... 20,000
Formation ... 720,000		Telegraphs and Tele-phones ... 370,000

Track ...	3,620,000
Signals and Switches ...	120,000
Stations and Buildings ...	1,000,000
Mechanical Works and Plant ...	1,100,000
Rolling Stock ...	5,600,000
General and Preliminary Expenses ...	2,200,000
Interest during Construction 6 per cent. per annum—2 years	2,400,000

Estimate of Cost of Rolling Stock :-

30 Locomotives at \$70,000 ...	2,100,000
50 Coaches at \$18,000 ...	900,000
420 Wagons at \$6,000 ...	2,520,000
8 Service Cars at \$10,000 ...	80,000
	\$5,600,000

Estimate of Number of Passengers Carried per Year—1,000,000.

Estimate of Amount of Freight per Year—1,500,000 tons.

Estimate of Yearly Receipts and Expenditure :-

Operating Revenue \$6,000,000.	Maintenance of Way and Structures ... 550,000
Passenger Service ... 1,800,000	Others ... 50,000
Freight ... 4,000,000	Net Operating Revenue \$3,500,000.
Others ... 200,000	Income Debits \$3,000,000.
Operating Expenses \$2,500,000.	Income Credits \$700,000.
General Expenses ... 530,000	Net income Debits 2,300,000.
Traffic Expenses ... 400,000	Profit for the Year, \$1,200,000.
Running Expenses ... 520,000	
Maintenance of Equipment ... 450,000	

Japan's Coal Industry*

By Walter Buchler

THE security of Japan's economic independence through assured sources for supplies of raw materials, particularly in the eventuality of war, has been, and still is, the principal problem before every Government that has come into power in Japan during the last 10 years. In case of war, a possibility the Japanese Press often hints at, it is essential for Japan's navy to have an assured supply of fuel. Oil is being used to a large extent, but for the bulk of this fuel she is dependent on foreign supplies. Japan is poor in iron deposits, and coal forms the most important of all her minerals. Her coal is mainly bituminous; there is very little anthracite. Her total reserve is estimated at: Anthracite, 60,000,000 tons; bituminous coal, 7,130,000,000 tons; lignite, 779,000,000.

The principal coal mines are in the province of Kyushu, which supplies 75 per cent. of the total; coal is also mined in the Hokkaido (Far North of Japan), Honshu (the main island), Karafuto (Japanese Saghalien), and in her two colonies, Korea and Formosa. Every encouragement is given by the Government through its Mining Bureau to collieries to increase their output, with the result that Japan is now practically independent of foreign coal. Her production of coal, lignite, etc., during the past 15 years has been as shown in Table:—

TABLE I.—Japanese Fuel Output.

Year.	Met. tons.
1912 ..	19,747,715
1913 ..	21,415,593
1914 ..	22,293,419
1915 ..	20,490,474
1916 ..	22,901,580
1917 ..	26,361,420
1918 ..	28,029,425
1919 ..	31,271,093
1920 ..	29,245,384
1921 ..	26,220,617
1922 ..	27,701,731
1923 ..	28,948,820
1924 ..	30,110,826
1925 ..	29,220,000
1926† ..	21,371,000

†Nine months.

There are 40 mines of any importance in Japan, but only four have an output exceeding one million tons a year. Production is distributed as follows, in million tons: Kyushu, 20; Hokkaido, 5; Iwaki, 3; Yamaguchi, 1.5; others, 0.5.

The operation of collieries is mainly in the hands of a few large concerns who form separate companies to work them. Considerable quantities of mining machinery are imported by them. The leading concerns are: (1) Mitsui Bussan Kaisha; (2) Mitsubishi

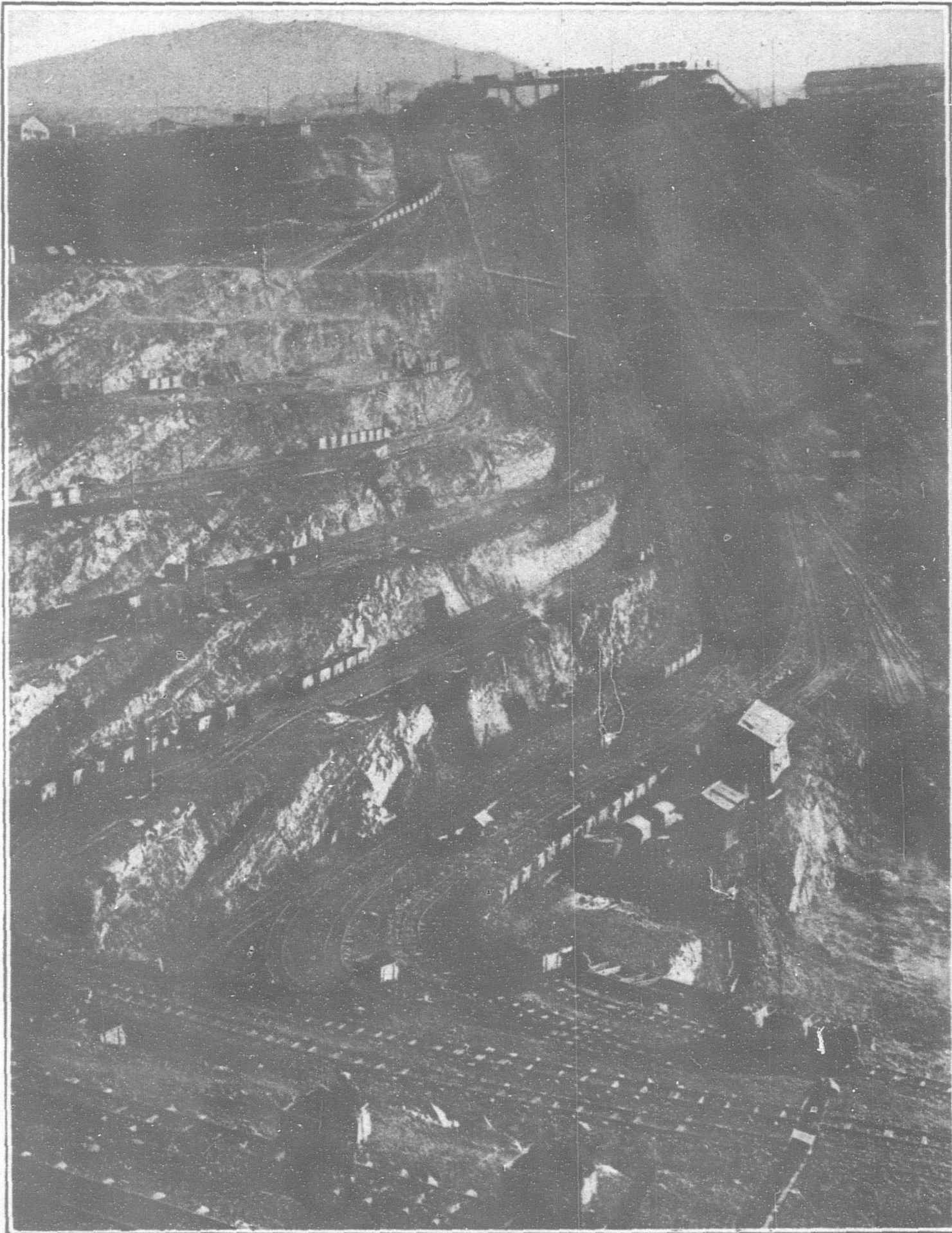
Shoji Kaisha; (3) Furukawa Mining Company; (4) Kuhara Mining Company, Limited; (5) Fujita Mining Company, Limited; (6) Okura Mining Company, Limited; and (7) Sumitomo Goshi Kaisha.

The Mitsui Bussan Kaisha have the largest share of mining in Japan, and conduct their mining transactions under the name of Mitsui Mining Company, which has a paid-up capital of £6,250,000. The Hokkaido Colliery & Steamship Company operates the collieries in the Hokkaido, and has a paid-up capital of £4,000,000.

Conditions in the Japan coal mines have not yet reached the same perfection as in European countries; in fact, they may be said to be nowhere so bad, except perhaps in China. In some of the coal mines in Kyushu, both large and small, men and women work practically naked; the air is extremely hot, the roads, are narrow, with often four or five inches of water at the bottom. Coal is transported to the cars in heavy baskets which men and women carry on a pole resting on the shoulder, while in the other hand the miner—man or woman—carries an oil safety lamp. There are some 450,000 miners in Japan, of whom a quarter are women. Of these, 70,000 work underground; they go down into the mine where in many places the coal seams are only about 2½-ft. thick. Women

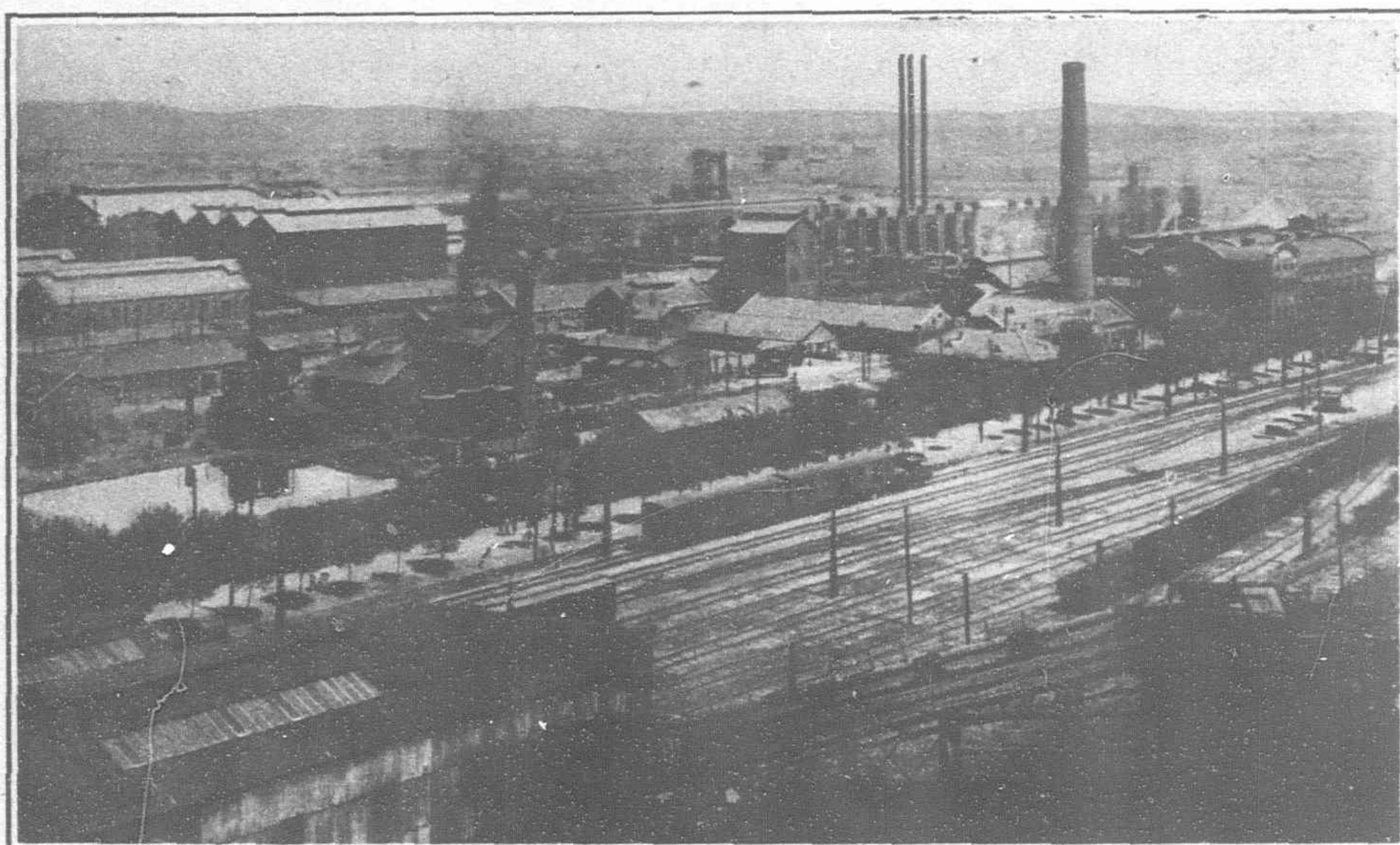
are employed to push cars to the shaft bottom, working 12 hours per shift. Wages run from 1s. to 4s. a day.

In spite of low wages, coal prices in Japan are high owing to the high cost of transporting the coal, which has to be carried long distances to reach industrial centers. Freight charges are heavy, the efficiency of the Japanese miner low, costs of production unusually great; all these factors constitute a severe handicap to Japan's industrial industries, which are based not only on low wages but also cheap coal. As to the cost of freight, from the Hokkaido this amounts to about 50 per cent. of the price of coal in Tokyo. The daily output per worker in Japan is only 0.64 ton. This is mostly due to the thin seams and the consequent difficulty to use mechanical means. The cost of extraction before the war was 6s. 4d. per ton, but now is 24s. per ton. Coal mined in Kyushu is shipped, for the most part, from the port of Moji. Prices for Kyushu lump coal per



Open-Cut, Fushun.

* "The Iron and Coal Trades Review."



Mond Gas Plant, Fushun Colliery.

ton f.o.b. Moji are 29s. for best quality and 23s. for second quality. Wholesale prices for best lump coal in Tokyo during a space of 11 years varied from 17s. (in 1916) to 56s. (in 1920 and 1921). The present price 42s. per ton.

The comparative dearness of coal in Japan is also due to coalowners making, now and again, agreements to restrain production and keep up prices. They would also like to have a heavy duty put on imported coal, although most of the coal—other than that from her colonies—comes from Chinese mines belonging to Japanese interests.

Imports during the past few years were shown in Table II :—

TABLE II.—*Japanese Coal Imports.*

Year.	Met. tons.	Year.	Met. tons.	Year.	Met. tons.
1912 ..	305,882	1917 ..	707,241	1922 ..	1,168,524
1913 ..	572,194	1918 ..	761,698	1923 ..	1,685,877
1914 ..	950,108	1919 ..	699,646	1924 ..	1,979,978
1915 ..	609,799	1920 ..	797,155	1925 ..	1,740,500
1916 ..	551,696	1921 ..	777,255	1926* ..	1,567,169

*Nine months.

The countries participating in this trade included China, Kwantung Leased Territory, and French Indo-China.

Coal mining in Japan's colonies has shown considerable progress in recent years, the Japanese Government giving every encouragement by granting concessions, and in places working mines itself for the use of the Imperial Navy. Although the coal resources of Korea are not extensive, deposits are considered to be large. Her reserves of coal are estimated at :—Anthracite, 40,820,000 tons ; bituminous coal, 14,130,000 tons ; lignite, 27,000,000 tons.

The chief center of the coal industry in Korea is at Pyengyang, where the mines are worked by the Government. Most of the coal is exported to Japan for the manufacture of briquettes, the coal being of a kind easily crumbling to powder. The Pyengyang mine is the only anthracite mine in Japanese territory, and its full-capacity is 300,000 tons per annum. It is only recently that a Japanese company specially formed for that purpose obtained permission to work anthracite mines in the Heian Nando territory. Prospecting is also in progress in other parts of Korea. The maximum output so far attained was 380,000 tons (in 1923). Korea coal mining is handicapped by lack of transport facilities in those areas where coal is said to be, but not yet developed. Japan takes most of Korea's exports of coal, which were in 1924 150,000 and in 1925 212,631 tons. Her imports of coal average 800,000 tons per annum.

The Japanese Government has adopted the same policy of encouragement in her other colony, Formosa, whose output of coal is fast approaching 2,000,000 tons annually, with the result that her exports and bunker supplies are increasing year by year.

Japan has also pursued geological investigations in Karafuto (Japanese Saghalien), and recent explorations indicate that

coal deposits exist in that island. Those in the Russian portion of the island have been worked for some years. Arrangements have been concluded to exploit them in Karafuto in co-operation with the Soviet Government. The exploitation is being carried on by two concerns, each with a capital of £1,000,000. So far it has been found that deposits of coal extend over the whole island in a series of seams from 2-ft. to 5-ft. thick, and that they can be exploited everywhere. At present there are seven coalfields, but the coal mined is barely sufficient to supply the local demands in the island. The output increased from 7,000 tons in 1916 to 199,385 tons in 1924.

Not satisfied with becoming independent herself of all foreign supplies of coal, Japan now aims at getting control of China's coalfields. Proximity to China and other Eastern markets, and the superiority of Japanese coal to the ordinary run of Chinese coals, have enabled her to attain considerable success in her exports of this commodity.

Table III shows Japan's coal exports in 1912 to 1926 :—

TABLE III.—*Japan's Coal Exports.*†

Year.	Met. tons.	Year.	Met. tons.	Year.	Met. tons.
1912 ..	3,440,347	1917 ..	2,791,133	1922 ..	1,690,699
1913 ..	3,839,881	1918 ..	2,179,600	1923 ..	1,574,305§
1914 ..	3,558,339	1919 ..	2,000,697	1924 ..	1,711,292
1915 ..	2,900,885	1920 ..	2,129,530	1925 ..	2,694,515
1916 ..	2,993,033	1921 ..	2,387,709	1926† ..	2,174,076

† Nine months only. ‡ Exclusive of bunkers. § Owing to the earthquake, this figure does not include the exports from the Port of Yokohama in July and August.

Most of Japan's exports of coal go to China. She is also seeking markets for coal in Central and South America. Exports, however, tend to decrease owing to the increase in her own home consumption. Therein lies one of the reasons for Japan's eagerness to find new sources for a supply of coal. Her activities in Manchuria are intensive: the Fushun and Yentai coal mines have made remarkable progress in recent years. Their production has steadily been increasing, as statistics show that the Fushun mines produced in 1923 3,858,629 tons, in 1924 4,929,585 tons, and in 1925 5,538,614 tons, while the output of the Yentai mines was 63,098 tons in 1923, 99,976 tons in 1924, and 103,850 tons in 1925.

The Fushun coal mines are near Mukden. The quality of the coal is excellent, being of high calorific power and containing very little sulphur. The Yentai coalfields come next in importance. They are North-East of Liaoyang, and have 16 seams, of which four are workable. The coal is soft and practically smokeless. These two Japanese coalfields are of considerable importance in the coal trade of the Far East. They both supply Japan and at the same time do a large export trade with the ports of China as well as in the Yangtze Valley. The Japanese Government is anxious to come to some treaty with the French Government, with a view to enable Japanese interests to exploit coal mines in Indo-China, but France does not seem to be very keen on admitting Japanese enterprise.

Power Company Merger.—The merger between the Gwanetsu Electric Power Company and Toshin Electric Company, both affiliated with the Tokyo Electric Light Company, is likely to take place. The former company is capitalized at ¥5,000,000, a quarter paid up, and has contracts with the Tokyo Light for the supply of power at ¥.75 per kilowatt a year.

The Tokyo Light also has entered into contracts with the Tohoku Electric Power Company and Shinetsu Electric Power Company for the purchase of power. The company will buy power from the former for three years starting from 1932 and from the latter for four years from 1933.

The Chinese Eastern Railway in 1926*

THE Chinese Eastern Railway traverses an extensive territory, but little explored as yet in its larger part never surveyed exactly and with a population of 14 million persons.

Up to the present time the railway remains the most important route serving the transportation requirements of North Manchuria.

Opened for traffic in 1903, the Chinese Eastern Railway acquired exceptional importance for the country in a comparatively short period as the basic artery of its colonization, and turning the formerly barren steppes, with a scanty population of nomads, into a rich agricultural district which annually places upon the market over 150 million poods of grain surplus.

The general technical standing of the railway and the most recent steps in its economic activity may be observed from the following data.

Ways and constructions.—The length of the permanent ways of the Chinese Eastern Railway towards the beginning of the building season of 1926 was somewhat above 2,800 versts, of which over 1,600 versts represented the main track.

More than one half of the rails (type of the C. E. Railway) had seen service for more than 25 years.

The continuously growing loading per axle of the rolling stock, which at present has been raised to 18.5 tons for the American gondola cars of the C. E. Railway, and the maximum pressure on the axle of locomotive—to 21.80 tons, as well as the tendency to a further increase of this pressure, have called forth the necessity of replacing existing rails by a heavier type of rail.

Since 1926, according to a plan approved by the Board of the Railway, the rails to be replaced began to be replaced by new ones, weighing 32.43 pounds per running foot, or 43.57 kgr. per running meter, and of a length of 6 sajens. In 1926 on the mountain defiles of the Eastern line and on the Southern line in all new rails of this type were laid over 124 versts. The rails removed from the main line were used for the individual replacement of rails on the same main line and for the replacement of rails of the light type—on station sidings, because the latter are too weak to bear the traffic of the heavy American gondola cars.

The ever growing loading per axle of freight trains, the increase in the number of cars making up a train, and the considerable speed of passenger trains induced the railway to proceed in 1926 to the replacing of the sand ballast with broken rock, thereby giving the roadbed greater stability.

In order to reinforce the track an additional sixteenth sleeper was placed under the rails on the main line where necessary.

Individual replacement of sleepers on the main line and on station sidings for purposes of development and reinforcement was also effected, over 480,000 sleepers being used in this connection.

The 35 sajens long girders of the bridges over the rivers Sungari I and Sungari II were reinforced and the girders of the bridge over the Nonni river were also strengthened.

The reinforcement of the roadbed of the main line where it crosses the inundated area of the Sungari II river was concluded.

A development and laying of new sidings and dead-end sidings at stations and junctions was made in order to in-

crease the carrying capacity of the line.

Steps were taken to increase the safety of traffic and the operating efficiency of stations by introducing the block system for switches and semaphores according to the system of Sheremeteff.

In 1926 the main line was subjected to an allround checking of levels and grades, and on the strength of this investigation a plan is being drawn up for correcting the projected line in places where trains have been torn as under more than once, and also in order to correct the profile of the line according to new actual requirements in connection with changes in climatic conditions, the topography of the country and the growth of traffic.

Very considerable current work was done to the amount of about Roubles 3,500,000 for the maintenance of the permanent way and the proper upkeep of artificial constructions.

The development of traffic between Harbin-New Town and the Pristan called in 1926 for a replacement of the existing wooden viaduct for horse and automobile traffic, which had been credited during the construction of the railway, by a permanent concrete structure, which was opened for traffic on November 7, 1926.

Besides, in 1926 work was done for the improvement and upkeep of civil constructions of the railway at an expense of Roubles 2,840,000. This is explained by the great number of buildings owned by the Chinese Eastern Railway and which is a distinguishing feature of it when compared with other railroads. Thus, the railway possesses 220 thousand square sajens of buildings with heating arrangements, and 19 thousand sajens without the same.

In spite of the large area of civil constructions (as compared with other railways), still the housing arrangements for the staff of employees and workmen are insufficient.

A part of passenger buildings, rest-houses for locomotive and train crews, as well as certain office buildings do not correspond by their size and equipment to the requirements of the growing traffic.

The school buildings and other buildings for educational and cultural needs are absolutely inadequate to meet the existing demands, and a great many of the existing ones far from complying with hygienic requirements.

In order to correct all these deficiencies and in accordance with a decentennial plan, in 1926 there were erected 6,481 square sajens of buildings with heating arrangement.

Of these, 1,708 square sajens were completely finished during the past building season and the remaining 4,773 square sajens will be finished in 1927.

The total budget of the Maintenance of Way Department amounted to about Roubles 12,900,000 in 1926, inclusive of expenses for auxiliary enterprises and expenses for the account of other departments.

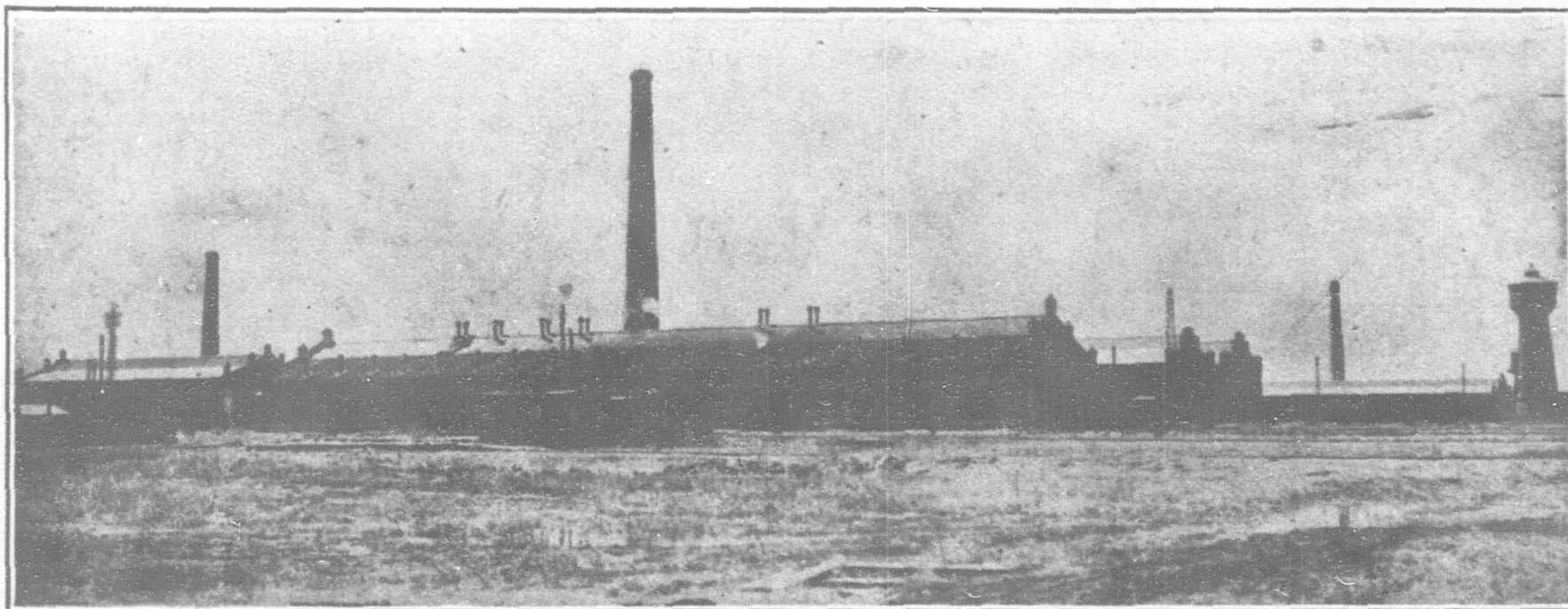
The program of works scheduled for 1926 was carried out in full.

Rolling stock and motive power.—The rolling stock of the Chinese Eastern Railway on hand on January 1, 1927, was as follows:—517 locomotives, consisting of 83 passenger locomotives, 276 freight decapod locomotives, 13 eight-wheeled locomotives, 124 twelve-

wheeled locomotives and 21 tank locomotives, 597 passenger coaches (158 on 4 axles and 439 on tow and three axles) and 12,217 freight cars.

It was one of the principal problems in the year under review to carry on the

* Manchuria Monitor



Railway Car Shop in Harbin

work of the preceding years in respect of the best possible utilization of the park of locomotives and a saving in fuel. The trials of long runs of passenger and freight locomotives, which were made in 1926, gave excellent results, and in 1926 the system of long runs was applied for the first time during the whole year.

The immediate results of this system were: 1. a reduction in the number of locomotives in operation, which was of particular importance in 1926, when very large transportation requirements demanded intensive work on the part of the railway; 2. a reduction in the number of divisional depots from 6 to 4; 3. a reduction in fuel consumption, and 4. a reduction in expenses for repairs. Besides, the weight of trains is being increased on certain sections of the line, which also made it possible to use the park of locomotives in a more rational way.

The improvements obtained may be observed from the following data:

	1924	1925	1926
Number of locomotives in operation ..	137	131	117
Percentage to the total number of locomotives on hand	25.5	24.8	22.5
Fuel consumption in Gold Roubles per 1 million net pood-versts	25.3	24.4	20.28

To form a correct estimate of these results one should bear in mind that the total work handled by the railway in 1926 was of a record figure, having exceeded the turnover of freight traffic in the preceding year by more than 20 per cent.

This fact even more enhances the importance of the achievements obtained because with less work of the park of locomotives and less fuel expenses a larger number of pood-versts was performed.

Thus, per 100 versts of the run of locomotives the following number of pood-versts was performed (in millions):

	1924	1925	1926
Gross	2,739	3,010	3,210
Net	1,505	1,681	1,923

Work in connection with the repairs of the rolling stock was carried on during the entire year; in addition to a complete execution of its own working program 600 freight cars of the Ussuri Railway were repaired as well.

The following principal improvements of the rolling stock should be noted: equipment of seven locomotives with steam superheaters of the Schmidt system; equipment of 12 locomotives with independent turbo-generators for electric light; equipment of 28 passenger coaches with electric light and replacement of the weak coupling gear of 315 freight cars and the normal axles of 839 cars with reinforced ones.

In order to obtain the best possible utilization of the park of cars work was carried on for the increase of the loading capacity of such cars, whereby for 1,219 ordinary convention cars the loading capacity was increased from 1,000 to 1,200 poods and for 135 2-axle American cars—from 1,200 to 1,500 poods.

Electric equipment was installed in seven water towers and additional hydraulic taps were fixed so as to improve the water supply of the railway.

Supply of material.—Side by side with general attainments in the domain of the motive power department of the railway, a number of measures should be noted tending to improve and make more rational the preparation of fuel and purchase of various material, which business was in charge of the Material Department.

The record taken of the fuel and material stored in the storehouses of the railway, which was effected in 1925, proved that the railway was storing a large quantity of log-lain fuel and obsolete material, a dead capital, which was then liquidated by a well-planned consumption and also by the sale of material not required by the railway.

The rejuvenation of the fuel reserve was brought to an end in 1926 and on January 1, 1927, the storage compounds of the railway held only the high quality fuel prepared in the course of the preceding year, valued at Gold Roubles 3,800,000, or by Roubles 1,600,000 less than the balance on hand on January 1, 1926.

The reserve of old material was reduced by 50 per cent. In 1926 a new system was also applied for purchases to the effect that any new material should be delivered to the railway in the beginning of the building season, and not in autumn, as was done during the preceding years. The general consumption of all material supplies and fuel in 1926 amounted to Gold Roubles 16,700,000.

Turnover of freight and work of the railway.—The freight turnover of the Chinese Eastern Railway in the year of 1926 reached the hitherto unprecedented figure of 327,6 million poods, exceeding by 24.2 per cent. the freight turnover of the railway in the foregoing year of 1925 (263,8 million poods), whereas the increase for the preceding year had not exceeded 10 per cent.

The production of pood-versts also increased, as compared to the foregoing year by 16,277 million pood-versts, or 21.1 per cent, considerably surpassing the average annual increase of pood-versts in the preceding years.

The success achieved in this respect in the quantity of goods hauled is noticed more clearly, when one studies the nature of these commodities. The totals hauled by the railway in 1924, 1925 and 1926 are in the following manner sub-divided into commercial goods, service stores and military stores (in millions of poods and in %):

	Commercial goods of great, small and passenger speed		Service Stores		Military Stores	
1924 ..	184.8	76.8	53.3	22.1	2.6	1.1
1925 ..	210.4	79.8	51.9	19.6	1.5	0.6
1926 ..	256.0	78.2	70.0	21.4	1.6	0.4

The average per diem work of the railway, affected in order to handle this volume of freight, was for the past fiscal year equal to 1,009 cars, or by 180 cars larger than in 1925.

In an effort to produce as many pood-versts as possible with the use of a minimum of transportation facilities, the following results were obtained:

Possessing a park of cars on hand amounting to 12,217 cars (in convention units), wherefrom it was possible to use for traffic an average of not more than 8,140 cars (in convention units), the railway produced:

	Millions of pood-versts of great & small speed goods	Consumed: Thousands of car-axle-versts	Thousands of train-versts	Average working car park	Average working Locom-park
1925 ..	77,284	229,843	4,103	4,109	56
	93,561	261,109	4,502	4,048	51

Therefore, with an increase in the number of pood-versts produced by 21.1 per cent, the car-axle-versts consumed increased by 13.6 per cent. only, the train-versts by 9.7 per cent. with an almost stationary park of cars and a smaller number of locomotives in operation.

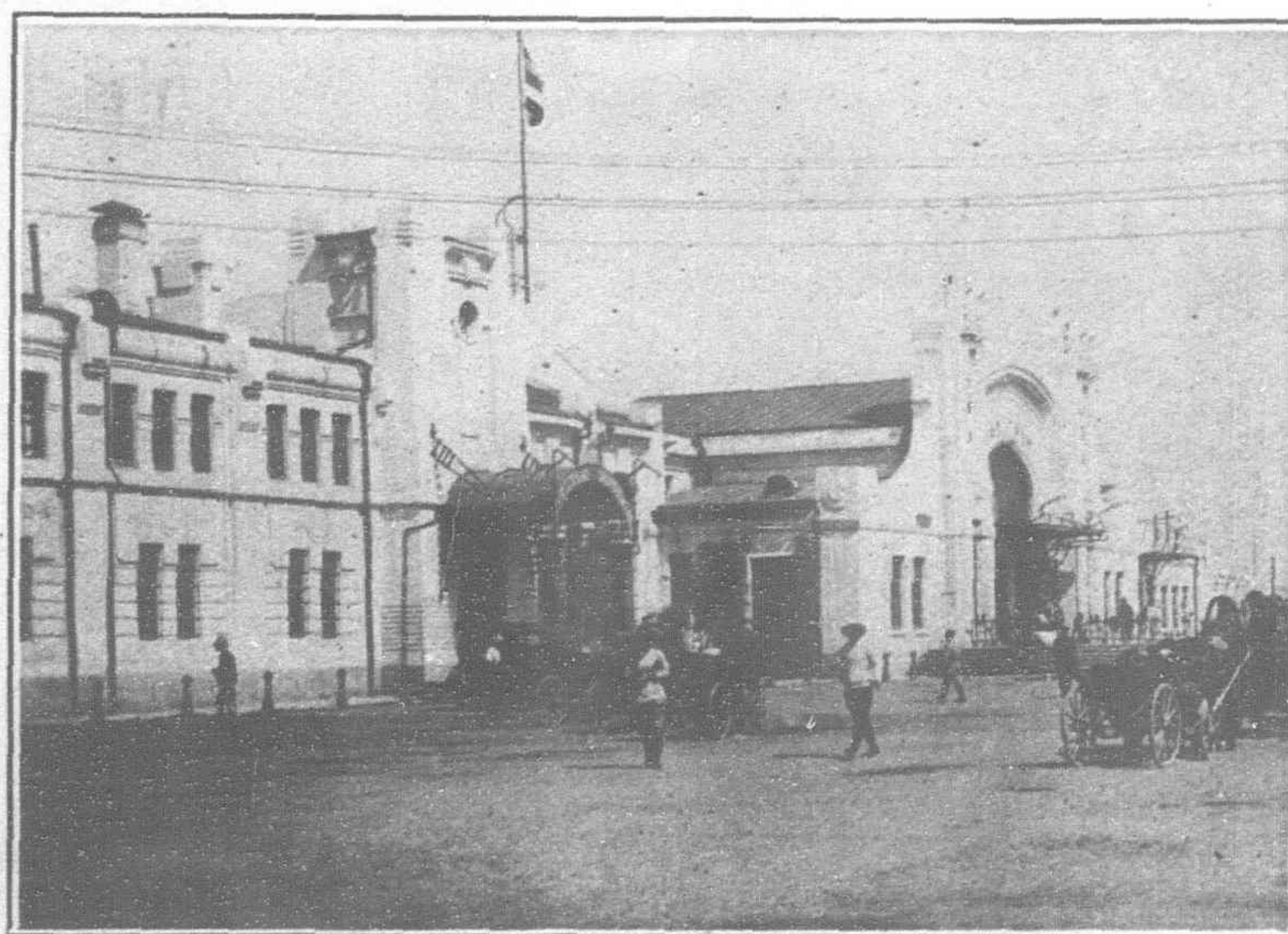
Such positive results in the operating department were obtained

by a number of steps both as regards the utilization of the means of transportation in the dimension of length as well as their utilization in time.

Measures tending to improve the utilization of tonnage.—To form a judgment of the efficient utilization of the tonnage in the year under review, one should in the first place dwell upon the average per axle of a loaded car, where the coefficient is systematically increasing from year to year (in poods):

1923	1924	1925	1926
466	488	500	519

These positive results were obtained through the putting into circulation of a considerable number of cars with a greater loading capacity. This, in 1925, 44 through traffic trains were in



The Harbin Station

operation, consisting of American 4-axle covered box-cars and gondolas; in 1926 there were already 53 such trains.

Besides, in 1926, 1,339 cars with a carrying capacity of 1,200 cars the so-called 20 ton cars, reconditioned from the ordinary box cars with a capacity of 1,000 poods, were put into circulation, and 155 Canadian cars, the displacement of which was raised from 1,200 to 1,500 poods.

The growth of the export traffic in 1926, as compared to 1925, necessarily lead to an increase in the haulage of empty cars; however, owing to steps taken for the transportation of service stores it became possible even to cut down the annual percentage of empty hauls from 32.2 per cent. in 1925 to 30.6 per cent. in 1926, and thereby obtain an increase in the average loading per axle of a freight car (loaded and empty), which is more considerable than the increase in the average loading per axle of a loaded car, which may be seen from the following comparative data about the modifications of the respective coefficient:

1923	1924	1925	1926
300	321	336	358

Measures for improving the utilization of cars in time.—Having obtained such favorable results in respect of the utilization of cars as regards their dimensional operation, i.e., an economy in the number of car-versts, the Chinese Eastern Railway in 1926 gave serious attention to an improvement in the time work of the cars, i.e. an economy in the number of car-hours.

The measures taken in this direction consisted in the first place in a permanent control over the demurrage of cars, and, in the second place, in putting the working park of cars in strict correspondence with the volume of the railway's work by attending to an elimination of superfluous cars and detailing them into the general reserve or the divisional reserves of cars, and, lastly by keeping a record of the demurrage of cars in trains at depot stations (divisional points).

The results of the railway's activity in this direction very soon led to a decrease in the efficient time and a corresponding increase in the daily run of a working car, which may be seen from the following comparative table:

	1923	1924	1925	1926
Efficient time of working car ..	6.6	5.7	4.8	4.0
Daily run	62.7	71.2	82.5	90.7

Commercial speed.—The commercial speed in the past few years is shown in the following table:

1923	1924	1925	1926
14.6	14.6	15.4	14.8

The sharp increase in the volume of the traffic with its, particular bearing upon the Western and Southern lines of the railway, where the carrying capacity of the line was utilized in full, naturally caused a drop in the commercial speed. Nevertheless, this reduction was very insignificant in 1926 owing to a number of steps taken to regulate the running of trains and to reduce their stops at intermediate stations.

Measures in respect of the safety of traffic, referring to the technical operation.

In the past year a centralized and electric block system of switches and semaphores was installed at certain stations of the railway in order to provide for more safety of traffic.

Besides, the following steps were taken in respect to the technical operation of traffic.

With a view better to utilized locomotives in connection with the development and extension of sidings at stations and junctions the normal make-up of freight trains of 200 axles in respect of their length was established and announced to the railway according to regulations approved by the Board of Directors.

To accelerate the passing of trains through the stations on the Western and Southern lines experimental despatching of passenger trains at points of crossing with other passenger or freight trains was put into effect by delivery of rods without

any passing of the latter through the apparatus, and in order to reduce the delay of trains at stations a regulation was issued fixing the exact whereabouts of the chief conductor in the train to enable the station master on duty to hand him the certificate regarding the delivery of the rod to the engine driver.

To accelerate the weighing of cars at certain stations special scales for cars of the "Tandem" system were erected making it possible to weight the cars in motion.

Besides, to avoid an agglomeration of cars with bulky goods particularly timber material, special transportable car scales of the "Boetticher" system were purchased and despatched to certain timber loading stations. These scales permit of the weighing of loaded cars by wheels.

Passenger traffic.—As regards passenger traffic it should be noted in the first place that the past year was distinguished by particular intensity of the transportation of passengers. Consequently, it became necessary to appoint a third pair of passenger trains on the Southern line from September, 1926.

For the same reason the run of passenger trains in the local traffic on the main line was also extended (trains Nos. 23 and 24 to Tsitsihar and trains Nos. 25 and 26 to Shihtowhotze).

The rational structure of the time table caused an economy in passenger car-axle-versts.

As will be shown below, the results of the passenger traffic in the past year were quite satisfactory.

Possessing a park of 158 four-axle passenger coaches and 439 two-axle coaches (including in this number baggage, dining, mail, sanitary and service coaches), the respective work of the railway is shown in the following table:

	1925	1926
Passenger car-axle-versts effected (thousands)	56,426	60,621
Passengers carried: paid passenger-versts (thousands)	321,010	388,106
Military passenger-versts (thousands)	41,976	35,000
Convicts and their guards passenger-versts (thousands)	456	210

Therefore, from a comparison of the past two years it appears that in spite of the insignificant increase in 1926 of the number of car-axle-versts used (7 per cent.), the number of paid passenger versts was by 20 per cent. higher than in 1925.

Commercial Activity

The above given data give a more or less exhaustive and complete picture of the work and activity of the principal technical departments of the Chinese Eastern Railway, the main object of which is to perform the work assigned to them in a most economic and efficient way by continuously introducing improvements and betterments purporting to reduce the general operating expenses of the railway.

The commercial work of the railway holds quite a unique position, being directed toward an increase in the freight turnover (the quantity of goods carried) of the railway, the attraction and canvassing of new goods to be hauled, the attachment to the railway of those handled previously, the regulating of the fundamental currents of freight traffic by routes and assisting the development of the local productive forces.

The extremely complicated economic situation in North Manchuria makes it necessary to dwell upon certain peculiarities in local activities, in order to give a clearer picture of the commercial work of the Chinese Eastern Railway.

North Manchuria is a typical agricultural country, with comparatively undeveloped industries. Consequently, the exporting and importing activity of the Chinese Eastern Railway is of foremost importance both for the railway itself and for the country as well.

Lacking direct access to the sea, the Chinese Eastern Railway, because of its geographical position, naturally is dependent



The Tsitsihar Station

to a certain extent upon its neighbors—the Ussuri Railway in the East, with the port of Vladivostok, on the South—the South Manchuria Railway opening the route to Dairen (Dalny) and on the West—the Transbaikial Railway.

The western route is of no particular importance at the present time because of the small commerce between the U. S. S. R. and China. The principal part is played by the eastern and southern directions, which are competing for the conquest of North Manchuria exports.

Owing to these particular reasons the Chinese Eastern Railway, as a commercial enterprise, is placed into quite special working conditions which should always be taken into consideration in a study of its operation and achievements.

The past year of 1926 was economically very favorable for North Manchuria. It was marked by bumper crops of the principal local cereals (soya beans, kaoliang, corn and Chinese native millet) which, naturally, in the first place had a bearing upon the work of the railway by increasing the quantity of goods carried in all directions and in every traffic.

The commercial transportation in 1926 by far exceeded that of any preceding years and reached the record figure of 256 million poods, being in excess of 50 million poods over the previous record of 1925.

The growth in the number of commercial goods carried by the railway in the course of the past five years, may be observed from the following table :

	Total carried Millions poods	Increase Millions poods	%
1922	151.5	—	—
1923	171.1	19.6	12.9
1924	184.7	13.6	8.0
1925	206.7	22.0	11.9
1926	255.0	49.3	23.8

The above table shows that the normal increase in the transportation of goods amounted to an average of about 11 per cent., and that in 1926 it leaped to more than twice this figure, in spite of the fact that the preceding year of 1925 was considered extremely propitious in the existence of the railway.

The first place in the goods handled by the railway, was taken, as usual, by cereals, the transportation of which amounted to 174 million poods, or about 70 per cent. of the total turnover, and showed an increase of 34 million poods over 1925; the second place was held by timber construction materials and fire wood—21.0 million poods against 19.5 million poods in 1925. These are followed by coal—19.7 million poods against 14.7 million poods in 1925. Among other goods import commodities are conspicuous, particularly articles for native Chinese consumption.

As regards timber materials, it should be remarked that in 1926 a very marked change occurred in their nature. The transportation of building timber fell by almost 2 million poods and was replaced by the transportation of fire wood for the requirements of the local market, which is explained by the decline in demand for timber in South Manchuria which began in 1925 in connection with the stopping of the building boom in Japan, which absorbed almost all of the Korean and Manchurian timber.

The distribution of goods by directions and categories of traffic maintained its former ratio (in millions of poods) :

	1922	1923	1924	1925	1925
Exports ..	97.4	111.3	120.1	143.1	165.6
Imports ..	23.8	28.0	30.7	30.0	35.7
Local traffic	291.	30.5	33.1	33.0	54.7

The export goods carried, representing about 65 per cent. of the total quantity of goods handled, continued as heretofore to determine both the general welfare of the country and the railway and were the principal basis of their economic activity. The imports were in direct dependence upon them, because a good crop increased the purchasing capacity of the population and, consequently, the demand for manufactured products increased in the same manner; such products, it is known, are brought into North Manchuria almost exclusively from outside countries.

The unprecedented growth, in 1926, of local traffic transportation over the Chinese Eastern Railway, may be sub-divided into the carriage of cereals, coal, fire wood and building materials, the causes for this increase being explained at the detailed study of the local traffic problem.

Exports

Over 90 per cent. of the entire exports consist of cereals and bean oil, whereby the following five principal categories should be noted: beans, bean cake, wheat, wheat flour and bean oil, for the transportation of which a serious fight was fought between the neighbor railways until in 1925 a special agreement was entered into whereby upon the termination of the grain exporting season a final settlement of accounts is effected between the Ussuri and the South Manchuria Railway in respect of the transportation of export goods of the Chinese Eastern Railway, 45 per cent. of which being assigned to the Ussuri Railway and 55 per cent. to the South Manchuria Chinese Railway. Should, however, as a matter of fact, the actual transportation in one of the two routes, have exceeded the established ratio, then the railway concerned will have to pay to the other contracting party an amount corresponding to the respective cost of the transportation of such goods.

The Chinese Eastern Railway, on its part, undertook all necessary measures toward an equal distribution of the freight currents maintaining the established ratio. Thus, in November, 1924, when the Japanese steamship companies reduced their freight rates from Dairen to Kobe for bean cake, thereby causing these goods to turn abruptly to the southern route, the Chinese Eastern Railway raised its tariff for the Southern route and thus re-established the former position. The results of all such measures in 1926 were quite satisfactory, which may be seen from the following comparative table for the past five years (in millions of Roubles):

EXPORTED OVER THE EASTERN ROUTE :

	1922	1923	1924	1925	1926
Beans	22.1	23.4	34.3	32.1	35.2
Bean cake	9.8	15.6	7.8	11.1	25.2
Bean oil	0.8	1.1	2.0	1.9	2.4
Wheat	2.0	1.9	0.4	0.8	—
Bran	0.2	0.4	0.3	0.2	0.3
Other cereals	1.5	0.5	0.8	2.3	9.6
Total	36.4	42.9	45.6	48.4	72.7

EXPORTED OVER THE SOUTHERN ROUTE :

	1922	1923	1924	1925	1926
Beans	31.9	36.6	35.0	52.3	59.2
Bean cake	2.9	2.7	16.7	11.0	0.9
Bean oil	0.2	0.3	—	0.1	—
Wheat	3.8	5.9	0.9	1.7	4.4
Flour	2.3	3.4	0.2	0.6	0.7
Bran .. ..	.13	1.9	0.8	0.8	0.9
Other cereals	4.5	3.5	3.0	14.8	17.9
Total	46.9	54.3	56.6	81.3	84.0

Comparing the above figures, we see that 1926 was an exceptionally favorable year for the eastern route: the increase in grain exports compared to that of 1925 almost entirely fell to the Ussuri railway; for this reason the export ratio, which had dropped to 37 per cent. for the Ussuri Railway in 1925, reached 46 per cent. for the Ussuri Railway in 1926, having exceeded all preceding years.

It is of interest to note that this increase is almost entirely due to the products manufactured from beans, and "uncovenanted cereals" among which a prominent place is held by kaoliang, the transportation of which increased from 1.1 million poods to 5.8 million poods, an important part in these consignments being held by the direct shipment of kaoliang from North Manchuria to Shanghai via Vladivostok, effected through the newly opened Commercial Agencies of the Chinese Eastern Railway, these shipments being the first of their kind ever made. Another consequence of this step was an enlargement of the selling market for local cereals, North Manchurian Exports penetrating to Shanghai for the first time.

Unmanufactured beans were carried mainly southward as heretofore because in the first place they are attracted that way by the Dairen oil mills and in the second place by the Dairen Grain Exchange, which has a foremost importance in the commercial activity of both North and South Manchuria.

The transportation of wheat flour, wheat and bran also grew to a certain extent; however, the fact that it was of greater advantage to cultivate local native cereals (particularly Soya beans) and the bad crops of wheat in the past two years considerably reduced the area under wheat cultivation, whereas the competition

of Canadian and American wheat on the outside markets almost reduced to naught the exporting activity of the local mill owners.

Simultaneously the exports of all other kinds of cereals showed a very marked improvement, *i.e.*, of such cereals, which in the annual reports are listed as "other cereals." In the past two years and particularly in 1926 these "other" cereals occupied an important place in the general volume of freight handled by the Chinese Eastern Railway in both directions and one may expect that certainly these shipments will grow from year to year.

The exports of timber material declined from 10.8 million poods to 8 millions owing to reasons already expounded above, whereby all this reduction is charged entirely to southern exports, exports to the east even showing a certain increase in connection with the growing demand for softwood (pine and fir) logs on the part of Japanese paper mills.

Other export consignments consisted of products of animal industries; their quantities were insignificant.

Imports

The import transportation is placed into quite different conditions. Even in pre-war years, when almost the entire exports (over 90 per cent.) were shipped *via* Egersheld, and the importation of goods of Russian origin brought in from the east and west had a very great importance in the life of North Manchuria, yet the bulk of import goods was consigned from the south.

This is explained principally by the fact that the main consumer of such goods—the Chinese farmer—has a demand for specific goods of Chinese manufacture, which are all classed under the one denomination of "Tsa Ho."

The principal centers for the production and sale of these products are located in China and in part in South Manchuria, consequently they gravitate toward the South Manchuria Railway.

Through Vladivostok are consigned mainly goods of European, particularly Russian, origin.

In the period between 1917 and 1923 the import activity of the port of Vladivostok came to a complete standstill, and only the imports of Suchan coal and fishery products amounting to less than 2,000,000 poods penetrated into Northern Manchuria from the east.

The Chinese Eastern Railway being interested in the loading of its cars, which return as empties after having carried eastward export consignments, is taking energetic measures to stimulate the inflow of import goods from the Ussuri Railway, with the full assistance of the latter, and the result was obtained that imports from the east gradually begin to increase; during the past five years they have quadrupled.

Import shipments are distributed by directions as follows (in millions of poods):

		1922	1923	1924	1925	1926
From the south	..	21.6	24.6	25.8	26.0	31.0
,, ,, east	..	1.3	0.3	2.0	3.1	4.7
Total	..	22.9	24.9	27.8	29.1	35.7

The principal import goods are: coal—11.5 mill. poods, salt—4.3 mill. poods, gunny bags for cereals—2.0 mill. poods, piece goods—1.6 mill. poods, mineral oils—1.5 mill. poods and fruits—1.4 mill. poods.

Leaving aside the transportation of coal and salt, as cheap bulky goods, we shall obtain a clearer picture of the imports into Northern Manchuria of regular import articles (in millions of poods):

IMPORTED :							
		Coal		Salt		Other goods	
		From Uss.	From S. Rly.	From Uss. Rly.	From S. M. Rly.	From Uss. Rly.	From S. M. R.
1923	..	0.9	11.4	—	3.2	0.4	10.0
1924	..	1.3	10.6	—	3.2	0.7	13.0
1925	..	1.9	9.7	—	3.9	1.2	12.4
1926	..	2.6	8.9	—	4.3	2.1	17.8

As regards the imports of coal it should be noted that in spite of the general increase in goods transported the arrivals of imported coal have declined to a certain extent, the reduction falling entirely to the Fushun coal. The arrivals of Suchan coal continue to grow both for the requirements of the private market and the Chinese Eastern Railway.

The transportation of salt is effected entirely over the Southern line, because the trade in salt is handled in China by the Government Salt Monopoly, and for the latter the nearest route is over the South Manchuria Railway and all the salt arriving in the area of the Chinese Eastern Railway is obtained at the salt works located on the shores of gulfs of Pechihli and Liaotung.

The development of the imports of other more valuable goods is interesting to follow.

The principle articles of imports *via* Vladivostok in 1926 were gunny bags (0.4 mill. poods) and Java sugar (0.4 mill. poods). these goods began to be shipped *via* Vladivostok in 1925, and therefore one may say that their shipment was due to recent measures taken by the railway, owing to which it became possible to regulate to a certain extent the imports of an extensive local consumption, which are brought into China by sea.

The imports of Soviet kerosene and benzine should also be noted. They made their appearance upon the Far Eastern markets after the war for the first time in 1924. At the present time their shipments exceed 200,000 poods and the Soviet kerosene is competing quite successfully with American and that of Sumatra, which formerly held the position of monopolists in Northern Manchuria.

Compared to pre-war days imports from the east have in 1926 reached the figure for 1913, namely 4.3 million poods; however in respect of the value of imported goods they have not yet quite reached the former level, because in pre-war years the imports of Suchan coal were very insignificant, salt, however, was shipped exclusively from the east.

Imports from the south are consigned either in the direct C. E.—S. M. through traffic or in the local traffic from Kwanchengtze station, being distributed as follows:

	1923	1924	1925	1926
From the South Manchuria Rly.	22.2	22.0	23.4	26.7
From Kwanchengtze station..	2.4	2.4	2.7	4.3

Consequently, the past year shows a particular increase in the shipments from Kwanchengtze station in the local traffic, which should be explained on the one hand by the drop in the rate of exchange of the local dollar, which considerably cheapened local consignments, the same being rated at the fixed ratio of one Gold Rouble=107 cents; on the other hand by the establishment of a special seasonal tariff for import goods, permitting the attraction of a large number of goods which prior to 1926 were shipped by cart from Changchun to the nearest district centers in the area of the Southern line of the Chinese Eastern Railway.

The goods handled by Manchouli station, which owing to the absence of through traffic arrangements, show the inter-exchange of commerce with Transbaikalia, are of no particular importance in 1926, being small in number, as the following table will show (in million of poods):

	1922	1923	1924	1925	1926
Arrived at Manchouli ..	5.5	1.5	0.8	1.1	2.0
Despatched from Manchouli ..	0.6	0.5	0.7	1.1	0.8

The comparatively larger shipments in 1922 are explained by the sending of grain to the U. S. S. R. for famine relief (3.8 mill. poods); in the following years shipments remained almost stable.

Among the goods arriving from the U. S. S. R. a certain change should be noted, namely that since the end of 1925 in addition to timber and coal, piece goods began to arrive, as well as tobacco products and mineral oils.

Local Traffic

The transportation of goods in the local traffic, which in the course of the past few years maintained a level of 33 million poods, showed a sharp increase in 1926 by jumping to 56.3 million poods, owing to a number of reasons, the principal of which were the following:

The growth in the bringing in of beans to the Harbin terminal stations, which was the result of a special tariff for the milling of beans by the Harbin bean oil mills, introduced with the purpose of strengthening and developing this principal branch of the local industry.

The development of the activity of local collieries, which are at present in a position to compete freely with imported coal—from Suchan (in the Maritime province) and Fushun (S. M. R.).

The latter phenomenon may have an even greater importance for the entire existence of the country, because until 1923 the prices

for coal were almost exclusively regulated by the Fushun product and owing to this fact the local industry, as well as to a certain extent the railway itself, were dependent upon the South Manchuria Railway, which is directly interested in the work of the Chinese Eastern Railway. In the period between 1923 and 1925 the increased imports of Suchan coal more or less had a regulating effect upon prices; however, in view of the great distance, this coal could not penetrate further than Harbin, and, consequently, it solved only in part the coal problem, as a whole. Upon the opening of the new coal mines at Muling on the Eastern line of the Chinese Eastern Railway and the rational working of the Chalainoerh mines (in the west), which since 1925 were operated by the new management of the Chinese Eastern Railway by its proper means, the Chinese Eastern Railway took up a strong attitude in the question of fuel supply, and in future may expect to become independent of imported coal altogether.

Therefore, the Chinese Eastern Railway applied all efforts toward the development of the carriage of local coal, establishing reduced tariffs for the benefit of the principal industrial centers, whereby the stations of the section from Harbin to Fularki had similar rates, equalizing thereby the operating conditions of the industrial enterprises and opening a wide field of activity to the enterprises on the Western line.

As a result of all these steps the transportation of local coal reached the figure recorded for Fushun coal, being distributed by despatching stations as follows (in millions of poods):

From stations	1923	1924	1925	1926
Manchouli	0.1	0.3	0.7	0.5
Chalainoerh	2.4	2.0	1.3	3.0
Sochingtze junction	—	—	0.9	4.2
Other stations	0.1	0.1	0.2	0.5
Total	2.6	2.4	3.1	8.2

Particular attention should also be drawn to the transportation of rice, which until 1923 was only imported from the South Manchuria Railway. The establishment of rice sowings in the area of the Eastern and Southern lines and the opening of rice cleaning mills prove that it is quite probable that in future North Manchuria will be a self-supplying country in respect of rice, and, indeed, upon the introduction of encouraging tariffs for the rice milling industry in the end of 1925, almost the entire imported rice was in the past year replaced by local rice, which can be seen from the following data regarding the transportation of rice (in thousands of poods):

	1924	1925	1926
From the S. M. R. and Kwanchengtze station	482	388	135
In local traffic	192	245	502
	674	633	637

Among other goods one could observe a large increase in the transportation of building materials and rails in connection with the construction of the Hu-hai Railway and the Harbin tramway, as well as an increase in the carriage of firewood (1926—6.9 mill. poods, 1925—3.6 mill. poods), in view of the very small quantity of wood arriving by river in Harbin during the navigation period of 1926, and because the entire tonnage of the Chinese river fleet was insufficient and engaged in the more advantageous transportation of farm produce from the Lower Sungari district.

Consequently, as regards the hauling of commercial goods, the year of 1926 must be considered extremely successful.

The passenger traffic, the development of which had been delayed by a number of outside reasons, in 1926 again began to proceed along a path of distinct improvement.

The carriage of passengers, by classes, as compared to foregoing years, showed the following figures (in thousands of individuals carried):

	I	II	III	IV	Total
1922	4	33	908	1,209	2,155
1923	4	24	776	1,563	2,367
1924	4	24	1,141	1,041	2,183
1925	5	24	1,317	1,110	2,454
1926	5	29	1,858	1,379	3,271

In addition to the general increase in the number of passengers carried, the relation between the different classes also was modified in a sense advantageous to the railway: the fourth class passengers, which is the normal class in the make-up of ordinary passenger trains on the Chinese Eastern Railway, having reached the maximum

in 1923, very markedly dropped and their subsequent increase is much slower than that of the third class, which proves that we have here a transfer of passengers from a lower to a higher class.

For the first time since the pre-war days we also observe an increase in the number of passengers of the two higher classes, being the result of the inflow of people travelling from the south of China to Western Europe via the U. S. S. R. and vice versa.

In order to attract these passengers the Commercial Agencies of the railway have opened a preliminary booking service and sale of tickets for the railway of the U. S. S. R. and made an extensive advertising campaign for this traffic, acting in this respect under an agreement with the Transbaikai Railway.

Measures for an improvement of the work and living conditions of workmen and employees.

In terminating the review of the fundamental measures concerning the technical and commercial activity of the Chinese Eastern Railway in 1926, it is necessary to dwell upon the question of the improvement of the living conditions of employees and workmen of the railway.

The most important achievement in this connection was the increase in the minimum wages for daily workmen from 45-50 cents to 60 gold kop. which at the present rate of exchange equals almost one Chinese local dollar (one gold rouble=125—130 cents).

With a view to improving the living conditions of lower employees and workmen of the railway new dwellings were built for them, as well as a number of improvements introduced in the equipment of those existing. Wages and salaries were also raised.

Recently the Board of the railway has agreed in principle to reduce the working norm of locomotive and train crews from 336 to 240 hours per month, with the right to introduce this measure as soon as financially feasible. In part the local staff on the line has also been increased so as to replace the former two shifts by two and a half and even three.

Financial Operating Results

The general increase in the number of commercial goods and passengers carried, which has been surveyed in another part of this article, is the reason for the increase in operating revenue, which by far exceeded the original expectations.

The general structure of the operating budget of the Chinese Eastern Railway was as follows (millions of roubles):

	1922	1923	1924	1925	1926
Revenue from	25.3	26.0	27.2	33.2	38.8
Transportation of goods	8.6	8.4	7.6	7.9	8.8
Ditto from passengers	33.9	34.4	34.8	41.8	47.6
Total revenue depending upon traffic	3.5	1.7	2.8	4.6	5.0
Revenue from other operations	37.4	36.1	37.6	46.4	52.6
GRAND TOTAL					

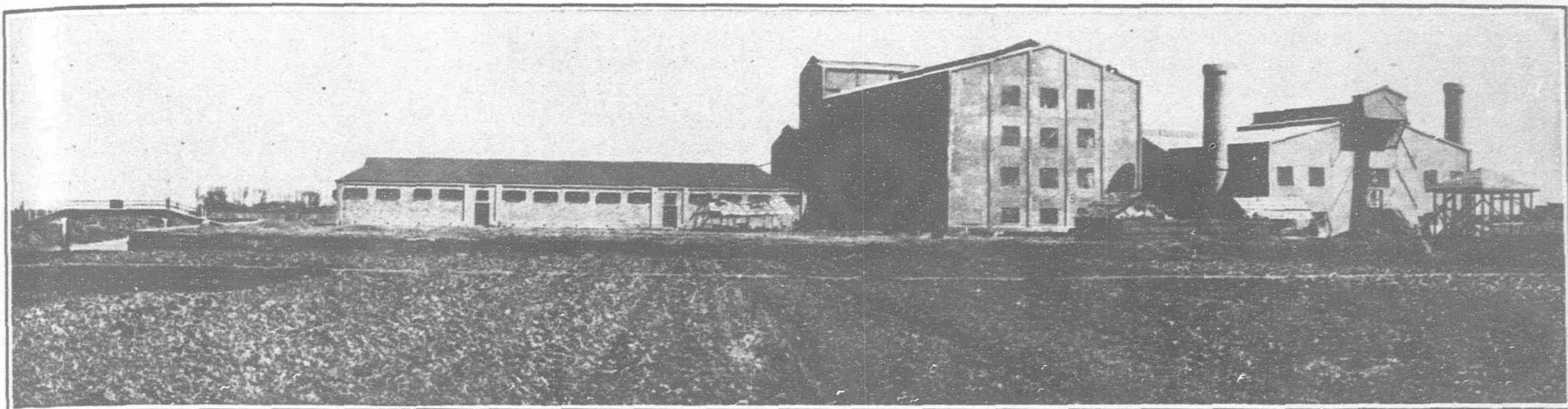
On the other hand, the different achievements and improvements of the technical departments of the railway made it possible to reduce the expenses falling to unit to the work performed, and, consequently, in spite of the increased building activity and the raising of wages and salaries the general expenditure of the railway followed in proportion to the increase in the gross and net revenue. Therefore the operating ratio of 1925, which was the best in the railways existence, remained without any change.

General data regarding the relation between revenue and expenses of the railway operation are given in the following table:

MILLIONS OF ROUBLES:

	Gross revenue	Expenditure	Net profit	% to gross revenue
1922	37.4	26.3	11.1	30
1923	36.1	24.3	11.8	33
1924	37.6	21.9	15.7	42
1925	46.4	24.1	22.3	48
1926	52.6	27.6	25.0	48

The favorable operating results of the railway permitted the undertaking of a number of necessary works and the appropriation for these amounted to 5.9 million roubles. Besides, the loss charged to the special enterprises of the railway (Administration of the concession zone, upkeep of military railway guards, etc.), amounted to 3.3 million roubles and, therefore, the final net profit of the railway in 1926 was equal to 15.8 million gold roubles.



The China National Sugar Refinery Plant.

China—Land of Primitive Cane Culture

By S. G. Ruegg

CHINESE ways are still primitive. The interior provinces make sugar as they did centuries ago. No one can have a correct understanding of China and just why it still clings to the old ways unless they know something of the background which dominates and overshadows the celestial empire.

Civilization, such as it is, dates back to 2,990 B. C. It is well to record at once that Chinese have been farmers for forty centuries. It is the only country on earth where the farmer is next to the scholar or philosopher and ranks higher than the military man, the merchant or the minister.

Let it also be known that China is reputed to be the land where the first wheel was invented, and this idea has brought about more progress in the world than any other invention.

Here, too, we must record that the Chinese are accredited with making sugar long before the Christian era. The Chinese writings tell of honey from canes used for heading and for medicines. No one will probably ever be able to trace the beginnings of sugar cane. We met a chief from the island of Ponape, now under the Japanese jurisdiction, a few years ago, and he insisted that their islands gave birth to cane but they must have gotten it from this land which is known as "the only empire under heaven."

China is the only land that ever dignified agriculture in a national way. We went to the Altar of Agriculture in Peking which for hundreds of years has been the scene of a wonderful ceremony. That has now stopped. China is in danger. The winds of progress are blowing suddenly and strongly dissipating and violently disrupting old manners and customs of the past, driving out the treasures of philosophy to the store house of old memories as the political convulsions have made shambles of these fine temples and ancient places.

Once a year the emperor of China went to the Altar of Agriculture. It is not far from the Altar of Heaven where the emperor appeared alone with no canopy over his head, brought the needs of the populace as a "sin bearer" to God and made sacrifice. The Altar of Heaven is of marble, raised high where no man-made covering can cloud the vision.

At the Altar of Agriculture, dedicated to the memory of the first farmer, prayer and sacrifice was made. Then the emperor stepped down, went into an allotted field and ploughed three furrows, the prime minister wielding the whip over the oxen. This he did up and down. Then nine other cabinet men had to do the same thing while seed was sown. The crop was used only for sacrificial purposes. The whole aim of the ceremony was to dignify labor and to this day three-fourths of the Chinese people are on farms, still plowing in the primitive way, as we found them, when passing through on trains the first week in January.

China is a vast empire. It could be the greatest cane country on earth if transportation were taken care of. It has endless resources. Asia contains one-half of the dry surface of the earth. China has an area larger than Europe and nearly as large as Mexico and the United States combined. The population in China is

nearly equal to that of Europe, six times that of South America and one-fourth of the population of the earth.

The average annual rainfall in northern China is about 20 inches. Mukden has somewhat more and we saw much ice and snow. Shanghai has no frosts. The Yangtze valley has 40 inches of rainfall and the farmers are planting their vegetables in January with short nipping frosts. The southern regions that have the cane have 80 inches of rainfall which is abundant, providing it is rightly distributed.

Six-sevenths of China's population is in one-third of her area. That is China's difficulty. The Yangtze valley alone has a population of 200,000,000 and the villages seem to bubble over with people. Most of the farmers live in villages because fear and superstition crowd them together. Everywhere there are high walls. The Chi'in dynasty built the Great Wall 255—206 B. C. It is 1,500 miles long and extends into Cathay, where remnants have been found just lately showing it was nearly 2,000 miles long. This wall represents Chinese complacency, the joy of achieving a smug life, one of ease, rest and lack of vision.

China's trouble at bottom is religious. That affects morals, spirits, and economic conditions. An American writer has been here five years and has studied famines, their causes and cure. He says that recently 500,000 Chinese died in one year and 20,000,000 were utterly destitute. He says that it is the religion of the people that keeps them that way. A writer from India says that all bad economic conditions in India are at the bottom religious for in that land tradition forbids people to take on the newer ways and the primitive rules with the overmastering spirit of the dragon.

Everywhere in China the people say when they are asked to go to unoccupied lands: "What will become of the graves of our ancestors?" All the way from Mukden to Peking and from Peking to Shanghai we saw on a 1,400 mile journey an endless procession of graves, round mounds, the father of the family or grandfather having the highest. The graves are on farms, not a community grave-yard as with us, for China is still in the patriarchal order.

Their religion will not permit them to leave these graves. Were the community grave-yard customary there would be agricultural hope. Everything is based on the family system. In the Shantung province farmers live that have 12 in a family. In a statistical study made by an American farmer a family of this size was found where one cow was kept, one donkey and two pigs and the family was kept alive on 2 1-2 acres. In this area there was an average population of 3,072 people, 256 donkeys, 256 cattle and 512 swine in one square mile. The average inhabited area of farmers runs to 800 per square mile while with us in 1900 it was only 60 per square mile.

It is no wonder then that the average Chinese folks are always just one pace ahead of abject poverty. In Thibet they have 500,000 square miles, nine times the size of Wisconsin, and they have only 750,000 people, about one and one-half persons to the square mile. We met a fur trader that goes out to Thibet and Mongolia and he says that he travels 18 days by camel train into this interior to get his furs, three thousand miles, going some distance by rail.

If China had transportation it would readily be seen that an entire era of newness would occur providing the Chinese could be persuaded to turn the dead wheel on a dead center of inertia over to a spinning, moving rate. Here in this vast land there are only 7,700 miles of railroad. The land needs 100,000 miles. We have 265,000 miles. The Chinese government owns and operates 60 per cent. of the railways, but these unfortunately are now in the hands of the militarists.

The road from Peking to Pukow is equipped with locomotives from Schenectady, New York, and the New York Car Company made all the cars. The Germans built the stations. Our train was delayed five hours by the movement of military trains, for Mukden is the center of the great arsenal and headquarters of Chang Tso-lin, the northern general. The government or military dictator is using all the profits of the road for fighting and the American manufacturers are waiting for their pay. The American Car Company furnished 600 cars that are still not paid for. They bored holes into the gondolas and are using the steel cars for fortresses in battle.

With this warfare going on it will readily be seen that China is in a bad way. The interior is reached by boats up the river, the Yangtze being the most important. River navigation is very popular. We find, for instance, that all the crude sugar sent into the refinery in Shanghai came by boat tied up in bamboo and boat transportation is very cheap.

Again China economically is just where we were 100 years ago. Labor is so abundant, muscle power is so cheap, that it does not pay to have labor-saving devices. Farm hands are hired by the year and in the Shansi province, which is quite in the interior, they get from 15 to 16 Mexican dollars a year, which includes board and lodging. That would not be much beyond \$9 a year. We found the Shanghai dairy people paying nine Mexican dollars a month with lodging but not board. A Mexican dollar is equivalent to about 44 cents.

We found the rickshaw men getting six Mexican dollars a week which is high pay. However, we were told that it took just as much money to build a factory in the average Chinese large city as it costs us to build and we were soon discovering the reason. Where we would have six carpenters they have fifty. This is true everywhere. It takes four clerks to wait on one person. In a house there are five servants where we have one. Thus in the refineries labor can be gotten for a song, but Chinese labor, unless trained, is very inefficient.

China only consumes 3 pounds of steel annually. We in the United States consume 450 pounds per capita. One needs only to go over the advertising in "The Planter" and note the number of advertisers selling iron and steel products. It is the index of a nation's progress.

You have the same situation with reference to automobiles. China has only 20,000 vehicles. We have 20,000,000, one for every six people. The world at large has only 1 for every 100. The progress of any nation or community is gauged at once by the automobiles, the tractors and trucks used and here the country roads are wretched, absolutely impassable, for the trail predominates and men are carrying enormous loads on their backs for 12 cents a day. We found 30 men carrying a 1,500-pound piece of structural steel for a half a mile.

A nation again can be gauged by its coal consumption. We mined 585,000,000 tons of coal in 1925; China only mined 25,000,000 tons. No wonder everybody shivers in these parts. Nine-tenths of the homes have no stoves. Wretchedness and rags are found everywhere. It is true the coast towns like Shanghai and Hong Kong, built by the Britishers, have all the modern conveniences but that is just a drop in the bucket. China's hope is like all countries, in her agricultural resources, and a proper liberation of them. We see flour from Seattle and Vancouver. There are only 160 modern mills in China and in 1924 she imported four million barrels from other lands. The same is true of sugar. When we shall come to things distinctly sugar we will find that China once exported sugar; now she is importing thousands of tons, from Japan especially.

It is true that her rice output is placed at 1,000,000,000 bushels, a superficial estimate, with 400,000,000 bushels of wheat and 900,000 tons of peanuts. These are sold everywhere on the street and 4 per cent. of the tonnage is exported. In cotton China stands third in production with 2,500,000 American bales. Soy beans are raised at the rate of 5,000,000 tons and set the pace of tall prices, even sugar beets in Manchuria. The United States exports kerosene oil and petroleum products to 90 per cent. of her consumption. All imports pay 5 per cent. duty, according to an agreement reached

by the powers in 1842 when the Chinese shiftlessness and lack of responsibility made it imperative that a stable rate be established. There is now a fight over this revision. Sugar pays the same duty.

It might be stated here for those who expect to do business with China, especially along the sugar line, that it is done on the international basis. The individual stands out prominently because there are not many foreigners. China has about 12,000 American residents, half of them missionaries. Shanghai has 3,500 Americans, many of them interested in business, in fact of the 250 American firms doing business in China half of them have their headquarters in Shanghai.

Here then we have the impact of a mechanically complete western civilization bumping furiously into a staid, quaint, satisfied and effete civilization, as progressive westerners characterize Chinese culture. We shall refer to the conflict later, going on now politically, in writing on the sugar industry in particular, but the aim of this essay has been to give a background to the story of primitive sugar manufacture which shall engage our attention in the remaining space. It explains why the majority of sugar made in this spacious land harks back to centuries of the past.

Let us go to Sang Tau Kwantung and note how a "corporation" plans its sugar interests. Generally it is a family tree that bands itself together if that metaphor is allowable. Relatives trust each other. The patriarchal system has always developed loyalty to the inner circle of relatives. Beyond that circle any ethical standard is permissible for China has never developed a national consciousness until now.

This small group purchases some paraphernalia and sets up shop where it is most convenient. The place is changed often from year to year to please the constituency and make it central, the center varying with the places where the cane is planted. Generally a refinery runs from Christmas to Easter, about four months. Cane has been raised around Sang T' Tau for 60 years. The cane is planted near the village where hauling does not take too much time. The main building consists of a palm leaf shed with a chimney in the center, in modern days a stove pipe, often the small kind which you find running out through the show windows of stores in cities and villages. The pipe is connected with the brick oven below.

The mill proper is composed of two stones, raised vertically on which are fastened two wooden gears. These stones are placed in the most primitive fashion. Bullocks or water oxen with horns doubled back run these mills. The operation is accompanied by a squeak which is a sign of effort and gives a sing-song tone which the Chinese coolies always use in these parts when a heavy load is on. It works for concerted action and also relieves the drudgery of the task.

A stone basin catches the juice and some-times it is stirred to bring the scum and dirt to the top. Then the juice is run into a series of pans, the first one giving it the first boiling with heat applied direct. The natives have learned to govern the heat somewhat for caramelization has spoiled more than one batch although we found in China and Japan, too, that the people consumed sugar that we would not regard as fit to give to cattle. There is no appreciation of quality among the common folks as yet.

Then there are some wooden paddles and barrels, for wood is the favorite receptacle just as the dairies even in Shanghai continue to use the old wooden feeding tub. Wooden pails and barrels complete the outfit of the refinery plus a lot of bamboo straw for covering. That is always on hand even in the modern refineries and the Chinese have an abundance of it. They use it to protect pedestrians on streets where building is going on and use it over ice rinks and everywhere for packing.

There is a head boiler who has the usual corps of assistants and they stir the juice all the time while it is being boiled. While the boiling is going on the first gang keeps feeding the cane into the mill and a skimmer is at the primitive pan taking up the residue that collects. The foreman is the real sugar boiler and to him is entrusted the matter of clarification. This much the Chinese have learned, that not every one can be a real boiler, and that the purifying process is after all the most important.

Special men do the firing. The boiler gives his orders to these men. The evaporated juices run through sieves each time going from one pan to the other to catch some of the dregs. The foreman adds lime to precipitate the impurities. It is claimed that this is a very old method and every sugar maker knows that lime still plays an important rôle in modern sugar making. Eggs are also used as we use them in making maple sugar in the northern states, the white of an egg taking impurities that no other substance will.

The boiling process in each pan varies in time, but in the third pan 45 minutes is allotted and here lime is added, once more according to the judgment of the foreman. The chief watches the juices and uses his hand as the old boiler once did, also his eye. The hot molasses, as they call it, is finally passed through a cloth sieve into earthen ware for cooling and often a little vegetable oil is added to hasten the congealing.

In crude sugar they only use an hour for boiling, but in the better qualities longer time is taken because the Chinese have from time immemorial noted that quality was always connected with time and that a real sugar could not be hurried.

Some of the massecuite is poured onto mats to stiffen and this is afterward sliced into small thin layers and sold on the market. In some smaller places it is poured into earthen jars and remains 30 or 40 days for crystallization, according to the state of moisture in the air. This produces three grades of sugar, the upper being the best or white sugar, the middle a green next in price and the lowest containing the molasses or the brown sugar.

The plant described at first is run day and night much as our sorghum plants are run in northern states. The workers generally come from the cane regions because they have experience and they are naturally paid a little better than those living in the region where the plant is set up for sugar making is an art above the level of the average manufacturer and the men working in it belong to an aristocracy. The men get five Mexican dollars for making 10 piculs of sugar (1,330 pounds) and they are boarded and lodged by the plant. The gangs hired for firing are paid \$2 for 10 piculs. We judge these are figures per person. The work of collecting and cutting cane is done at \$3 for every 10 piculs. The plant hires 12 oxen for a season at the rate of \$330, the plant paying for feeding and housing of the animals. The animals are shifted, two being worked at a time, and shifted as soon as four barrels of sugar are produced. Oxen live on cane leaves.

This shows that they have a well gauged system of labor, paying for all work on the piece basis. The bagasse is also used for fuel in these primitive plants as no one has an idea of the scarcity of fuel in China. There has been a deforestation going on for centuries. The railroads built by Europeans have planted trees on the right-of-way and often these are stripped as far as men can go, of branches and twigs. The farmers spend their winter months gleaning weeds with sickles and many of the farm regions are slick and clean because in their desperation to keep warm and to run ordinary plants like this sugar plant, they must conserve every bit of fuel possible.

The burning of bagasse was not introduced by westerners. It apparently has been the custom here for centuries, probably its value being demonstrated when it was dried out after a few months.

It is estimated that the cost of a mill outfit is about 200 Mexican dollars. The cost of producing a picul of sugar (or 133 pounds) is put at \$5 in the Sang Tau region. That would be a picul of sugar to \$2.20 for 133 pounds, a trifle over a cent a pound in American money. The factory has been able to work up from 4 to 5 barrels of juice an hour. Each barrel is reported to produce 108 cattie of sugar and as a catty is about one and one-third pounds that would mean about 144 pounds.

The 24 hour output of such a primitive mill is put at 10 piculs from about 60 barrels of juice and with a return of \$19 a picul and with a cost of \$5 a picul for manufacture, would give the factory a daily return of \$190 from which \$50 must be deducted for manufacture and that leaves the planter \$140 for the 10 piculs. The reader will note it does not include the price of the cane for this is a co-operative planters' factory.

Canes in this district are classified as "white cause," "bamboo canes," "wood canes," and "black canes." The white cane is the best variety and the planters have learned to distinguish this variety readily and give it the right of way in planting. They estimate that one now will produce 15 piculs of cane which would approximate about 2,000 pounds, as a Chinese mow is one-sixth of an acre, that would mean that the Chinese cane runs only six tons an acre. Fifty mows or about nine acres are considered a fair area for such mill to work up. The mills are quite common in the cane districts but they show how far the tonnage and ways are behind our advanced countries, both in cane production and in the method of producing sugar. The dragon and the wall are very evident in China, even though this is the celestial empire.

China Wars Hurt Japanese Trade

Troubled Areas Buy Less from Japan and Sell Less to Japan

THE Imperial Ministry of Finance reports that the total trade with China for 1926 was valued at Y.787,986,000, of which Y.520,046,000 was exports and Y.267,940,000 imports, the excess of imports being Y.252,106,000. Compared with the trade in 1925 this is a decrease in the excess of exports amounting to Y.57,766,000.

The summarized trade is shown in the following table:

EXPORTS				
(1,000 yen)				
			1926	1925
Manchuria...	...	...	Y.66,135	Y.76,579
North China	...	...	98,837	122,136
Central China	...	...	196,930	220,057
South China	...	...	19,543	4,574
Total ...	...	...	381,355	423,346
Kwantung State	...	...	92,658	94,944
Hongkong	...	...	46,123	65,736
Grand total ...	...	...	520,046	584,026
IMPORTS				
Manchuria...	...	...	Y.15,301	Y.10,829
North China	...	...	68,688	69,899
Central China	...	...	77,658	57,504
South China	...	...	8,112	6,453
Total ...	...	...	169,759	162,685
Kwantung State	...	...	96,616	109,605
Hongkong	...	...	1,565	1,864
Grand Total	...	...	267,940	274,154
Excess Exports	...	...	252,106	309,872

The greatest losses were in the trade with the disturbed areas. Exports both to North and Central China fell off more than Y.20,000,000 each, while that to Hongkong was only a little short of that amount. The only increase was in the trade with South China which increased Y.15,000,000. Imports, except from Kwantung State, which decreased Y.13,000,000, were greater in 1926 than in 1925.

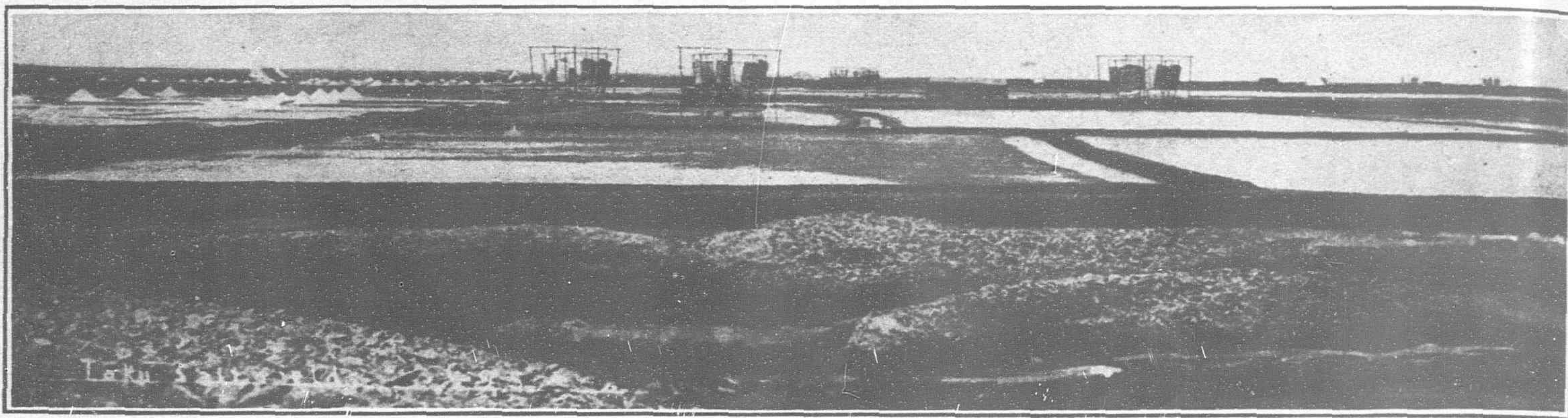
The trade with Manchuria was affected by the Manchurian currency question. The purchasing power of Manchuria having decreased by an alarming extent and Japanese trade was badly damaged. The low price of all manufactured goods last year helped to keep the export trade going in the face of continued political and financial disturbances in China. Until the Chinese troubles are settled there is little hope for any better condition of the export trade to that country, which is Japan's best customer for manufactured goods.

China's principal purchases from Japan are:

Commodity	1926		1925	
	Quantity (In 1,000s)	Value (Y.1,000)	Quantity (In 1,000s)	Value (Y.1,000)
Aquatic products	...	Y.11,807	...	Y.10,576
Sugar: Refined (Piculs)	2,682	30,314	2,175	29,279
Coal (Tons)	1,775	20,047	1,898	22,642
Cotton Yarn: ward	...	...	...	...
Y.1,044,000 to the	...	...	...	...
nextterm. (piculs)	218	25,706	398	50,072
Cotton Goods	...	180,077	...	194,013
Paper	...	10,961	...	11,366

Japan's principal imports from China are:—

Commodity	1926		1925	
	Quantity (In 1,000s)	Value (Y.1,000)	Quantity (In 1,000s)	Value (Y.1,000)
Beans & peas (Piculs)	2,393	Y.17,852	1,803	Y.15,104
French Eggs (Piculs)...	286	11,318	324	12,591
Oil Cake (Units)	869	45,134	690	49,974
Wheat bran (Piculs)	2,256	11,154	2,662	13,104



The Taku Salt Fields.

Salt Refining and Alkali Manufacturing in Tientsin

THE Chiu Ta Salt Refining Company was organised in 1916 at Tangku, near Tientsin, with a capital of \$50,000, which has since been raised to \$2,500,000. It has two plants and employs about 700 operatives. Refined salt is made from common salt by a process of boiling and filtration. The process consists of first dissolving common salt in water in a tank and then siphoning the solution to a filtration bed. The filtered brine is then boiled and dried. The daily output of refined salt from the two plants totals about 70 tons. The product is either loosely packed in cloth bags and glass bottles or pressed into bricks. The bulk is consumed in the Yangtze valley provinces.

Crude salt is obtained partly from the company's own plants and partly from Tangku salt manufacturers. The company has six beds for manufacturing crude salt, covering a total area of over 10,000 *mow*. Sea water is pumped into these beds by means of windmills and evaporated under sunlight. The salt drying or evaporating season covers about four months of the year, from March to July, during which between 200,000 and 300,000 piculs of crude salt are manufactured. This quantity is sufficient only for one of its refining plants, the balance being made up by purchases from the neighboring salt manufacturers. The crude salt produced at Tangku is of good quality, capable of producing 82 catties of refined salt from every picul of "fresh" crude salt and about 87 catties from a picul of "old" crude salt, the latter having been kept in storage for several years. Common crude salt contains 80-90 per cent. of calcium chloride; refined salt 95 per cent. A picul of "old" crude salt is sold on the Tangku market at about \$25.

The company has obtained permission from the Salt Administration to buy 600,000 piculs of crude salt from the Tangku salt manufacturers every year. All crude salt, including that manufactured by the company's own plants, must be stored in the Government salt godown at Tangku and the company must pay tax and obtain permits from the Tientsin Salt Commissioner every time it draws upon the supply in storage. The rate of tax is \$2.50 for every 10 catties of crude salt. The refined salt is also stored in the godown at Tangku before being marketed and taxed again at rates varying with destination. Shipments destined for Shanghai are taxed at \$2.50 a picul, those for Hankow, at \$4.50 a picul, and those for the Tientsin market, at \$3 a picul. This tax exempts the company's refined salt from all other *likin* dues. A rebate is also allowed of \$2.50 per 110 catties on the tax paid on the crude salt.

From the by-products, the company used to manufacture tooth paste, tooth powder and other chemical products. This branch of the industry is now conceded to the Hwang Hai Chemical Industrial Research Society, organised by the company's chemical experts and those of the Yung Li Alkali Mfg. Co. The society's headquarters are located at Tangku, near the company's premises. Here

there is a well-equipped laboratory and a well-stocked library. Its membership includes a large number of chemical students trained in universities both at home and abroad. The society now produces tooth powder, florida water, gourmet powder, ink, etc.

The Yung Li Alkali Mfg. Co. was organised by the same group of capitalists who financed the Chiu Ta Salt Refining Company in 1926. Its premises are at Tangku, near the Chiu Ta's plants, covering about 130 *mow*. It employs about 40 staff members and 440 workmen. Its principal equipment includes one lime kiln 80 feet high, with an automatic derrick for lifting limestone, two ammonia manufacturing tanks, capable of turning out 80,000 pounds of the gas every 24 hours, four boilers and two power generators. The raw materials consumed by the company are common salt, limestone and coke. The limestone is obtained from neighboring quarries, while the coke is made from coal obtained from the Kailan Mining Administration. Salt is manufactured by the company's own salt plants at Hanku a town about 90 *li* from Tangku. The company has obtained a grant from the Salt Administration exempting the salt consumed for soda manufacturing from the regular salt tax. Shipments of salt transported from its own salt plants to the factory must, however, pass the Government salt godown at Tangku, and must be covered by a special permit issued by the Salt Commissioner at Tientsin. The salt revenue officials keep a close watch on the company's use of salt. Five official supervisors are appointed to stay on the company's premises regularly. The salaries of these functionaries, amounting in total to \$600 a month, are paid by the company.

The company adopts the Solvay process in the manufacture of soda, which may be briefly described as follows: a strong solution of sodium chloride (common salt) is allowed to pass through a tank and comes in contact with a solution of ammonium hydrogen carbonate. The contact precipitates the sodium hydrogen carbonate (bicarbonate of soda). This is converted into normal sodium carbonate (sal soda) by heating, which liberates the water and carbon dioxide from the compound. As soda is an important factor in many branches of industries, including glass making, paper manufacturing, soap-making, bleaching, dyeing and ore reduction, the company has received much encouragement and legislative protection from the Government. Its product is exempt from *likin* dues for five years and the Government has also forbidden the opening of a similar factory within a radius of 100 *li* from the Yung Li works.

The Yung Li and the Chiu Ta Companies employ about 1,200 workmen, excluding the jobbers or common coolies. The wages of the Yung Li operatives are paid by the day, the rate varying with individual skill and nature of occupation. The daily pay of a mechanic amounts to \$0.60-\$1.20, of an electrician, \$0.60-\$0.72, of a motorman, \$0.60-\$0.96, of a stonemason, \$0.48-\$0.60, of a carpenter, \$0.36-\$0.48, of an apprentice, \$0.30-\$0.36, and of a

common coolie, \$0.30-\$0.36. The workmen of the Chiu Ta are paid by the month, the rate being about \$30 for a skilled mechanic, and \$7 to \$9 for a common laborer. The workmen of both factories are very well treated. At the end of the year, a month's extra pay is given in addition to a share of the bonus. At the festivals, tips are given in the form of food, presents, and money payment. Each workman is given one straw hat and two suits of cotton clothes every year. The two works operate day and night, with two or three shifts of workmen according to their work. A week's holiday is given for Chinese New Year. Twenty-four days' leave of absence with pay is granted to each man every year. The company has a hospital with wards under one resident doctor, two assistants and a few nurses, giving free medical attendance. Sick leave is granted with full pay up to one month. Those permanently disabled by occupational accidents remain on the pay list for varying periods. Pension and funeral expenses are granted to the relatives of those killed by such accidents.

The workmen of the Chiu Ta Company have organised a "mutual help society" which requires every member to pay a monthly subscription of 10 cents into a common pool, deposited with the company at 10 per cent. interest per annum. Workmen requiring

financial aid owing to marriage, death of parents or other relatives, or injury by occupational accidents, may obtain it from this fund. About 80 per cent. of the Chiu Ta's operatives are members of the society. A system of compulsory insurance has also been adopted by the Chiu Ta. Each man is required to deposit at least 50 cents a month. The company pays 12 per cent. interest per annum on the workmen's deposits. Compulsory school attendance for two hours every day is enforced upon every workman under 25 years of age. Textbooks and stationery are given free. The company has also established the Ming Sing School to give free education to the children of the workmen.

The Chiu Ta's workmen are housed in a spacious dormitory, which, besides the sleeping quarters, has a library, reception rooms, bath rooms, toilet rooms and other conveniences. Each bed room is occupied by five to seven workmen, who elect a supervisor among themselves. Food is provided by the company and sold to the workmen at a fixed price. A store run by the workmen themselves has been organised to sell other daily necessities at fixed prices. A workmen's co-operative store is being planned. Near the dormitories, rows of small houses have been built by the company and rented to married employees at nominal rates.

Japanese Government Plans Immense Subsidies for Industries

THE Imperial Ministry of Commerce and Industry has planned the use of ¥45,000,000 over a period of 15 years in encouragement of certain select industries considered important from the point of view of the national economy and defense. It was also planned to exempt all companies receiving the subsidy from the business profits tax for a period of years after the subsidy was granted.

The Imperial Ministry of Finance does not approve the second part of this plan, because it has many complex features and believes that exemption from the business tax will work more harm than good on the concerns subsidized.

Accordingly the Ministry of Commerce has revised its original plan and will ask only for subsidies to cover a period of ten years to be given as encouragement to essential industries only. The Ministry of Finance will decide the amount of subsidy to be allowed in each instance, while exemption from the business profits tax is not to be granted.

To determine what industries shall be entitled to the subsidy a special committee will be appointed to consider the needs of the country. For the present, however, the Ministry is considering encouragement for only the following enterprises:

Industries Selected

1. Manufacturers of Artificial Indigo.
2. Manufacturers of Soda Ash.
3. Manufacturers of Aluminum.
4. Manufacturers of precision Instruments and Machines.

The whole field of industry which is eventually to be subsidized is reported on as follows:

1. Soda Ash.

- (a) Excessively cheap sales to be prevented.
- (b) A Government subsidy to be paid manufacturers; this to be from 30 to 50 sen per 100 kin (133 lbs.) of crude salt consumed.
- (c) To promote the technical efficiency and improve the financing of the evaporated salt industry of Manchuria.

2. Precision Machinery.

- (a) The Ministry of Commerce and Industry is to make arrangements for educating workmen on precision machines in Government and private mills where a high degree of efficiency is maintained. A subsidy for this purpose to be granted.
- (b) Mills with superior efficiency to be selected so that the Government may take measures to maintain their production capacity, and assist in making improvements in technique of production.
- (c) The Government to be asked to use its influence in establishing guilds of manufacturers of precision machinery and export and other associations of these manufacturers.

3. Power Machinery.

(A) The following call for special encouragement at this time:

- a. Water tube steam boilers.
- b. Steam turbines.
- c. Gasoline Engines.
- d. Diesel Engines.
- e. Water wheels.

(B) The Tariff on these machines to be revised.

(C) Subsidies to encourage their manufacture, and experimental Work looking toward their manufacture to be granted by the Government.

(D) A list of approved manufacturers to be prepared by each Department of the Imperial Government.

4. Spinning Machinery.

- (a) Well-equipped manufacturers to be given subsidies for manufacture and experimental work.
- (b) Co-operation of manufacturers and spinning companies to be encouraged with a view of unifying the types of machinery used, and to encourage the use of the domestic machines.
- (c) Sales to be expanded by developing markets abroad thus making it possible to maintain productive capacity.

5. Machine tools and equipment.

- (a) Measures to be taken to develop the manufacture of equipment for producing large machines.
- (b) Urgent measures to be taken to develop manufacture of precision machines for wood-working machinery, grinding and milling machines, automatic drills, gun barrel lathes, etc.
- (c) To establish standard grades of precision machinery and to give subsidies for machinery coming up to the established standards.
- (d) The tariff on machinery to be revised:
 1. Large machines; Tariff Item, No. 595; 6, 7, 8, 9. Present rates; ¥18.50, 16.00, 9.00 and 8.00. To be revised to; ¥22.00; 21.50; 13.50; and 12.00
 2. For precision machine tools. The duty to be increased to double that charged on all other machine tools.

6. Wool Industry. (the questionnaire reads "Wool Industry-principally wool textiles," but this should be changed to Wool Industry, including tops, wool yarn, wool textiles.")

- (a) Organizations supplying wool to be improved.
- (b) Warehouses for storing raw wool to be selected, and bank accommodations to be arranged against the receipts from these warehouses.
- (c) To allow rebates on wool goods exported covering the import tax on all days used in their production.
- (d) The Government to subsidize the manufacture of machinery used in the wool industry; and all parts of such machinery, in special needle belts.

Engineering Notes

Clynos in Japan.—Messrs. Rootes, Ltd., of Devonshire House, Piccadilly, London, W.1, sole world exporters of Clynos cars, announce the opening of an office in Japan, at 412. Toyo Building, Ushi Yamashita Cho, Tokyo. This will be the headquarters of their representative, Major Chichester Smith.

Silting up of Grand Canal.—One of the most important features of the year, from the commercial point of view, was the ever-increasing silting up of the Grand Canal. This was particularly so at Shihmen, where the water-level in the month of June was so low that the steam-launch companies had to use special light-draught launches and cargo-boats for the Kashing-Hangchow section, until the heavy rainfalls at the end of June saved the situation. On account of this drawback a great deal of cargo was driven to the railway route, resulting in a loss of revenue—*Hangchow Customs Report, 1926.*

Cotton Mill in Mukden Plans Expansion.—The Fengtien Cotton Mill of Mukden, Fengtien province made handsome profits last year. It turned out 150,000-160,000 pieces of cotton cloth and 800,000-900,000 lb. of yarns in 1926, which were immediately sold out, its output being far from sufficient to meet the demand. The net profit last year amounted to \$1,600,000 in round figures. The mill management is planning expansion by (1) increasing its capital by another \$3,000,000, (2) building a new factory, (3) recruiting 500 more workers (4) purchasing 20 more spinning machines and 10 more looms operated by electric power, (5) establishing branch factories at Liaoyang, Tiehling, Antung and Newchwang, (6) buying 2,000 more *mow* of land for the cultivation of cotton, (7) adding a new department for wool spinning and weaving, (8) offering special inducements to encourage cotton growing by the farmers, and (9) sending skilled men to study the cotton spinning and weaving industry in Japan. The annual import of cotton goods into Manchuria is valued at \$100,000,000, of which 60 per cent. is consumed by South Manchuria and 40 per cent. by North Manchuria, the imports into Harbin alone exceeding \$23,000,000 last year.

Mineral Deposits of Chekiang.—The mountainous districts in southern, central and western Chekiang, China, abound in mineral deposits, which, however, have been very imperfectly prospected. According to a bulletin issued by the Chinese Government Bureau of Economic Information, Peking, there are three main deposits of coal, the first at Changhing on the Chekiang-Anhwei border, the second at Kinhwa and Chuchow in south-western Chekiang, and the third at Tunglu, Siaofeng and other districts in the valleys of the Chein Tang River. The mines at Changhing have been worked by a company which has a mining area estimated to hold 30,000,000 tons. Very little has been done to work the other two areas, one of which contains anthracite.

Iron deposits are found at Chingnewshan and other districts of the province, the contents of the Chingnewshan deposit, which consists of hematite and limonite, averaging between 55 and 60 per cent. of iron. A mining area at Hsitungkwan has ores containing about 60-70 per cent. of iron. There are also copper mines in Chekiang and some valuable deposits of alum, the annual output of the latter mineral being valued at over \$1,000,000. Lead mines are found in different parts of the province, the best known deposit occurring at Tungfengshan, in Chuki, the ores of which contain from 60 to 65 per cent. of lead. One company has obtained the right to work this property. A lead mine at Yinshankwan yields ores containing zinc and silver besides lead. Though silver forms only a very small percentage, the quantity of both zinc and lead is large enough to warrant large scale mining. Lead and silver mines are also known to exist in at least three other places.

The most productive zinc mine in Chekiang province is at Wukan, in Chuki, the ores of which contain on the average from 35 to 55 per cent. Fluorites of different colors are found among the rocks in quite a number of districts, and Chekiang officials have received numerous applications for rights to work the fluorite mines at forty different places in the province. Various kinds of mineral pigments are also produced in Chekiang.

Through Telephone Services between Manchuria and Siberia.—Mukden and Soviet authorities have concluded agreements for installing long distance telephone services between Harbin and Chita and Harbin and Vladivostok. The total cost is estimated at \$1,500,000, which will be borne equally by the Russian and Mukden authorities.

A Chinese Tug.—A motor tug has been built for their own service by the New Engineering and Shipbuilding Works, Ltd., of Yangtszepoo, Shanghai. She is 58-ft. in length, with a beam of 14-ft. and a draught of 4-ft. 10-ins. The engine is a 140 b.h.p. Gardner four-cylinder semi-Diesel motor, which gives a speed of 9½ knots.

New Kobe to Arima Tram Line Planned.—Arima, now a sleepy little resort difficult of access, is expected to gain popularity as a summer refuge from the heat and dust of the city when the new Kobe to Arima electric railway is completed in April next year.

"As soon as it became known that we had received permission to build a fast electric railway line connecting Kobe with Arima, land prices in and around Arima began to soar and it is expected that there will be an even greater boom as the project goes forward," said Mr. T. Ogino, chief of the construction staff,

Obu, about five miles from Kobe, which at present is practically unknown to those in the city, also is destined to become known as a garden suburb, he said. The Kobe-Arima Denki Tetsudo Kabushiki Kaisha, to give the company its full name, has bought 400,000 *tsubo* of land situated on a plateau and surrounded by gorgeous scenery.

Plans to Protect Fertilizer Trade.—Promotion of the industry of extracting nitrogen fertilizer from the air by the fixation process is being studied by the Fertilizer Investigation Commission which has been organized by the Ministry of Agriculture and Forestry Experts are discussing protection of private companies engaged in this industry, its possible nationalization and the acceleration of production. Special committees have been appointed to study each angle.

The Government wishes private companies to manufacture this kind of fertilizer, since out of the 400,000 tons of chemical fertilizers consumed annually in Japan, about 290,000 tons are imported from America, Germany and England. The Government hopes that private companies will be able to produce in great volume at low prices.

Low production costs depend on cheap electric power, for 80 per cent. of the production cost is for power. The Government believes that power will be cheaper if the fertilizer companies install their own power plants. Consequently, the experts plan to apply the new Electric Business Law to the fertilizer companies, allowing them, like the power companies, to issue debentures to an amount double their paid-up capitalizations. Machinery necessary to equip their plants would be exempted from import duties.

The Government is planning to subsidize the companies and to engage foreign technical experts. Subsidies would be based on the amount of power used by each concern. According to plans, an atmospheric fertilizer syndicate would be formed. The Government would lend it low-interest funds to the extent of Y.50,000,000. The Government would have the right to supervise the manufacture of ammonium sulphate by the syndicate, establish a fertilizer bureau and fix the market price.

The Japan Chemical Industry Society has organized an investigation commission in connection with the chemical industry. This commission has adopted a resolution in which it declares that Japanese chemical industry is sorely depressed, in striking contrast to the progress made by Germany since the termination of the World War. The commission wants the sphere of the market extended and price competition eliminated. It is investigating industrial chemicals and drugs, caustic soda and soda ash, artificial fertilizers, leather, ceramic products, coal, gas and coal tar, dyestuffs and synthetic spices, petroleum, synthetic oils, lacquer, toilet soaps, celluloid, rayon, paper, brewing, rubber and acetic acid.

Liu Chang Coal Mining & Railroad Co.—A total profit of \$110,000.949 was realized for the year ended March, 1927, by the Liu Chang Coal Mining & Railroad Company, B154 Sinza Road, Shanghai. From this an amount of \$80,000 was deducted as fines imposed by the Tung Chuen Chu, leaving \$30,000.949 as the total net profit for the year. The company is capitalized at \$1,440,000 at \$100 per share. The general manager is Li Shu-chen and the manager Tu Chia-k'un.

Kiao Tsi Bridge.—The new bridge at Km. 14 of the Kiao-Tsi Ry. spanning the Li-Tsun-Ho was opened to traffic on May 25th. The bridge is 7 x 30 m. of Deck Plate Girder type. The steel was fabricated in Germany and purchased through G. Borkowetz and Carlowitz & Co. In order to maintain the same area of waterway the bridge was raised two meters. The total weight of steel is 525 tons and the total cost for all items was \$170,000 of which 24 per cent. was for earthwork, temporary trestle and siding. The erection was by the Yu-Ching Company of Shanghai.

Fushun Oil Shale Industry.—Referring again to the Fushun Oil Shale industry, Rear-Adm. Makino now in the temporary service of the S.M.R. Co., who went up to Tokyo towards the end of last month, wired back to the S.M.R. Co. General Offices a few days ago of the approval by the Navy people as quite reasonable of the business prospectus with estimates, as prepared by the Railway Co. for starting the industry.

This has completed the understanding with the Navy Office concerning the launching of the new venture.

The Railway Co. is now drafting a formal application to be presented to the Central Government for Official approval, and will be ready to submit it to Kwantung Government in a day or two. Kwantung Government being well acquainted with details of the plan, appreciative of its true merit, the same application will be forwarded to the Colonial Board, Tokyo, without delay. Then, on the part of the Central Government, the theme being quite familiar to the dignitaries concerned, perhaps excepting the new Cabinet Ministers, its sanction seems likely to be forthcoming also quite readily.

Thus, the starting of this industry has become a moral certainty in the very near future.

As to necessary outlay, it will be presented to Government as Supplementary Budget to the current fiscal year's for the approval of the Finance Ministry on securing the Government sanction for the enterprise plan itself.

In passing, Rear-Adm. Makino is due back at Dairen by tomorrow's steamer from Japan.

Shale Oil Plant Plans Approved.—Plans for the construction of a shale oil refining plant at its Fushun Colliery have been approved by the South Manchuria Railway Company, together with estimates for construction and maintenance.

According to the plans, the refinery will treat 2,000 tons of shale a day, or 680,000 tons a year. The plant will cost Y.5,000,000 to build and will turn out 25,000 tons of shale oil, in addition to 7,000 tons of paraffin and 23,000 tons of coke. The scheme was drafted by the dry distillation committee and approved by the company's directors. It has received the approval of the Government units concerned and now awaits the final sanction of the Cabinet.

If construction is commenced in the near future, the work should be done by 1930. It is assumed that work on the foundations will commence in July.

The company feels quite certain of the success of the enterprise, even without the Government guarantee. A contract is to be signed with the naval authorities who have agreed to take over the entire output.

Dr. T. Kimura of the Colliery Technical Institute, who has been engaged in experiments for extracting paraffin from the Fushun oil shale and for extracting oil, reports complete success. By following his process the work will be greatly simplified and the complex machinery once thought necessary will be eliminated. Moreover, a higher percentage of paraffin will be obtained.

Under Dr. Kimura's system, if the new plant is designed to handle 2,000 tons of shale a day, the annual income will be Y.800,000. The scientist also is studying the extraction of sulphate of ammonia from shale oil and reports progress.

Railway Surtax on Shanghai-Hangchow Line.—The 5 per cent. surtax on freight and passenger fare collected on the Shanghai-Hangchow-Ningpo Railway by former Chekiang officials is once more enforced. The proceeds, estimated at about \$200,000 a year, are to be set aside for railway improvement.

Merger Plans Proceed.—The rumored merger of the Tokyo Electric Light Company and Tokyo Electric Power Company is going to take tangible shape. Mr. Y. Matsunaga, vice-president of the latter company, has had frequent interviews with Baron Seinosuke Goh, chairman of the board of directors of the former institution. Opinions were exchanged between the two chiefs on the status of these companies. The Tokyo Electric Light has decided to establish an investigation department shortly in connection with the investigation of the other's assets and liabilities. This investigation is expected to take about two months. The Tokyo Electric Power also is to conduct a technical investigation on the other's business status. These companies are likely to ask Mr. Seihin Ikeda, senior managing-director of the Mitsui Bank, to appraise their properties and set ratios for stock transfer. Mr. Matsunaga is likely to join the directorate of the Tokyo Electric Light Company upon the merger.

Crystal Mining at Laoshan, Tsingtao.—The bulk of the rock crystal consumed in the optical glass making industry in China is produced at Laoshan, near Tsingtao. Commercially, crystal is divided into three classes by Chinese optical glass makers, the classification being based upon the color. What is called "ink crystal" is the dark colored variety, the "tea crystal" is of dark brownish shade, resembling the color of the red or black tea, and the "water crystal" is colorless. Crystal mining at Laoshan dates back a century or so ago. The industry is almost monopolized by a certain clan living near the place. The members of the clan, who are farmers, mine crystal as a slack season occupation, and are so experienced that they can accurately locate the mines underground by merely examining the indications on the surface soil. Every winter these men wander about the countryside prospecting for crystal deposits. Whenever they come across some small particles of crystal or partially crystalized quartz, they mark the spot and approach the owner of the land for a mining right. It is customary for the owner of the land to claim half of the gross profits realized from such mining operations. The crystal quarried is usually sold to the Tsingtao optical glass makers and the proceeds divided equally between the miner and the land owner.

Crystal quarried from the mines varies greatly in size. Sometimes a piece weighs over 40 or 50 catties. The average yearly output from the Laoshan mines is about 7,000 or 8,000 catties of "water crystal" and 3,000 or 4,000 catties of the other varieties, the colored varieties being far more valuable than the "water crystal." A mine is sometimes operated by a gang of 30 to 50 men hired by the miner, and the work is always completed in one or two days. The crystal is sold to the Chinese optical glass makers at Tsingtao by weight, at a price varying from \$1 to over \$100 per catty according to the kind and quality of the article. There are two optical glass makers in Tsingtao. the Pao Ming Optical Glass Manufacturing Company and the San Shan Cheng Optical Glass Manufacturing Company, engaged in making optical glasses exclusively from rock crystal. But in order to obtain the highest price for the best crystal, the miners often bring the first grade specimens to Peking or Soochow and dispose of them to optical glass makers and curio dealers who can afford to pay more. Quite a number of crystal miners at Laoshan have amassed moderate fortunes through their mining operations. Formerly they used to export the crystal as far as Urga, in Outer Mongolia, where they could sell it at a far higher profit than elsewhere, but the offers of the Peking and Soochow curio dealers and optical glass makers are usually liberal enough to satisfy their expectations.

The Chinese optical glass makers of the old school make eye glasses exclusively from rock crystal. The broad horned-rimmed spectacles worn by Chinese gentlemen of the old generation are produced by this class of manufacturers. Glasses made of colored crystal are far more valuable than those from the colorless variety because of the popular belief that glasses made of "ink" or "tea" crystal can absorb those sun rays harmful to the eyes. A pair of first grade colored crystal glasses are sometimes quoted at \$100 by the Tsingtao makers.

Japan "Buys British."—Messrs. C. A. Vandervell & Co., Ltd., have recently been successful in obtaining large contracts for the C.A.V. Tom Tit model, Loud Speakers in Japan.

Osaka-Kobe Rail Line Gets Y.15,000,000 Loan.—The Hanshin, a Osaka-Kobe, Rapid Transit Electric Railway Company has concluded negotiations with the Mitsui, Yanmaguchi, and Fujimoto banks and Sumitomo and Kashima trust companies for borrowing Y.15,000,000 at an annual interest rate of 7 per cent. Part of this loan will be devoted to the conversion of old loan and part to the business extension.

Water Works for Kirin City.—Kirin authorities are setting up a water works for the capital city. A preparatory office to carry out various constructive measures has been organized. According to the plans and specifications of the works, there will be a tank, a filtration bed, a power station and a new building of 17 rooms for the management. The water will be obtained from the Sungari River which flows by the city. The contracts for building the houses, the tank and the filtration bed have been awarded to several firms in Tientsin and Peking while Messrs. Carlowitz & Co., and Siemens China Co. will supply the mains, which will cover a total length of nearly 30,000 meters.

Tokyo Light Wants Loans Adjustment.—Mr. Shohachi Wakao, president of the Tokyo Electric Light Company, accompanied by Mr. Kengo Mori, its financial adviser, are expected to visit America and Europe in connection with the conversion and raising of loans for the firm. The electric light company has announced a program readjustment and improvement of its business system which includes the conversion of old loans raised in America at high rates for new loans in England.

The new policy also involves measures for raising the value of its stock, now quoted at a little less than its paid up price of Y.50, by means of improvement in its business system. A third reform policy of the company is an extensive merger plan involving such other large power companies as the Toho Electric Power, Daido Electric Power, Ujigawa Electric Power and Nippon Electric Power interests. The merger with the Tokyo Electric Power Company is likely to take place first under present circumstances.

Baldwin's Shipping Locomotives.—Industrial Philadelphia is still doing business with China, despite the warfare now being engaged in there by various factions. This week there will clear from the port of Philadelphia the steamship City of Johannesburg bound for Dalny, which is located in Northern China, and which has been comparatively free of the strife prevailing in other sections of the country.

The City of Johannesburg will have aboard four Mogul type locomotives, built by the Baldwin Locomotive Works for the Mukden and Hailung Railway.

Weighing with tenders, 160,000 pounds each, or approximately 286 tons, the Philadelphia-built locomotives will be placed aboard the ship at the Baldwin Eddystone plant beginning late Thursday afternoon or early Friday morning. The shipment will be made in what the builders term a "knocked-down" condition, various parts being crated. When the shipment reaches China the locomotives will be assembled for duty by a representative of the Baldwin concern.

Prior to the outbreak of the World War, China was one of Baldwin's most important customers, but the locomotive market, like markets generally, not only in China, but in virtually all the countries on the other side of the Atlantic and Pacific Oceans, were hard hit. Of late years, however, the Chinese market has been improving somewhat, and prior to this week's coming shipment, twenty locomotives have been built for Chinese railroads by the Baldwin works.

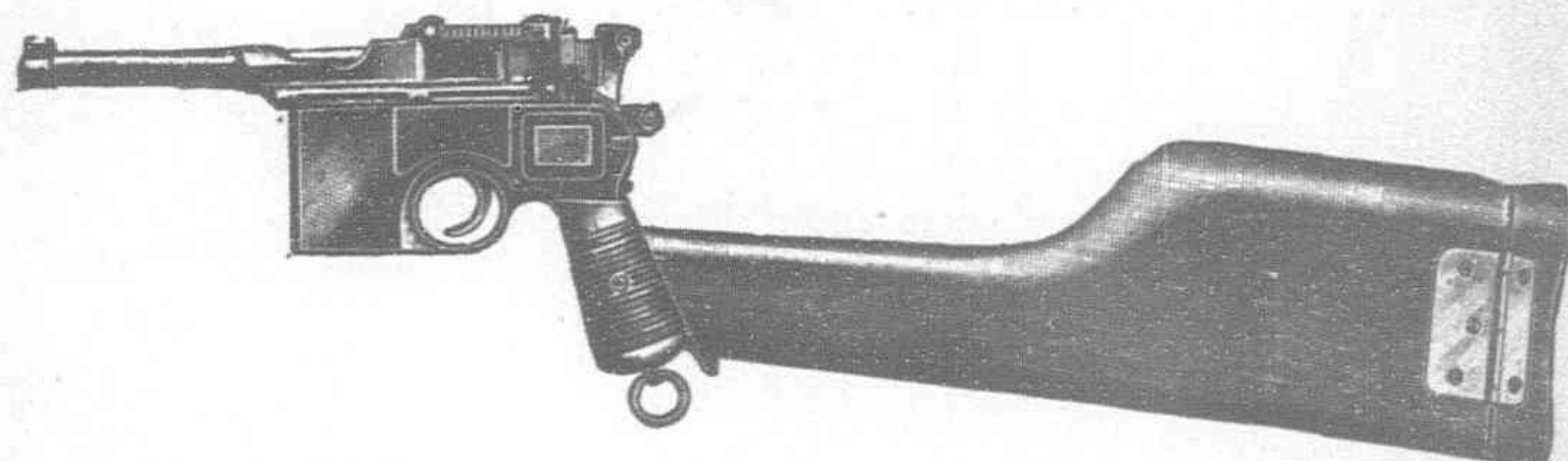
"We are sending locomotives to China all the time, said" Samuel M. Vauclain, president of Baldwin's yesterday, in discussing the scheduled arrival of the City of Johannesburg, due to reach Eddystone Thursday.

He added that the business was on a cash basis; that very little credit is being extended to China at present by Philadelphia concerns, and that what there is is on a short term basis.

Changchow-Amoy Railway.—The Changchow-Amoy Railway, about 56 li in length, used to be leased to private persons for operation, but Fukien authorities recently had the line once more placed under Government control by appointing Wu Tung-wen as director. The new director has asked the authorities for funds to make the necessary improvements and replacements for depreciated rolling stock.

Express Lift Co. in Singapore.—A contract, approximate value \$150,000,—has been placed for British lifts by the Public Works Department, Singapore, with the Express Lift Co., Ltd. London for twelve Passenger Express Lifts fitted with Automatic Floor Levelling Devices to be installed in the New General Post Office in Singapore, also one Express Goods lift for the same building. A large number of Express Lifts are installed in various parts of China including four in the new Chinese Post Office, Shanghai.

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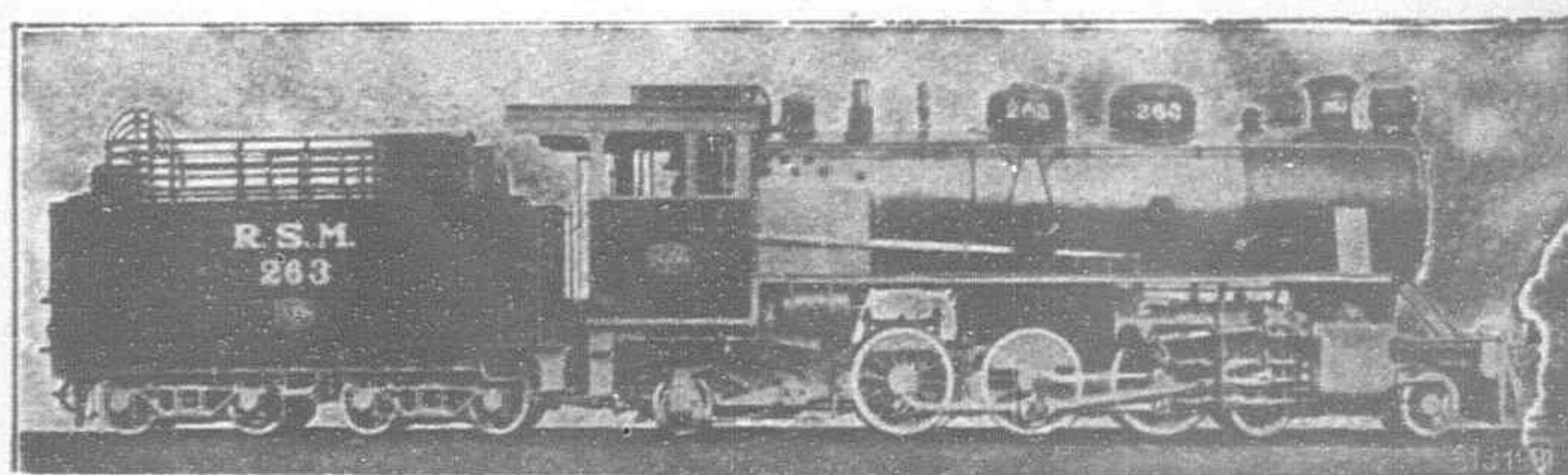
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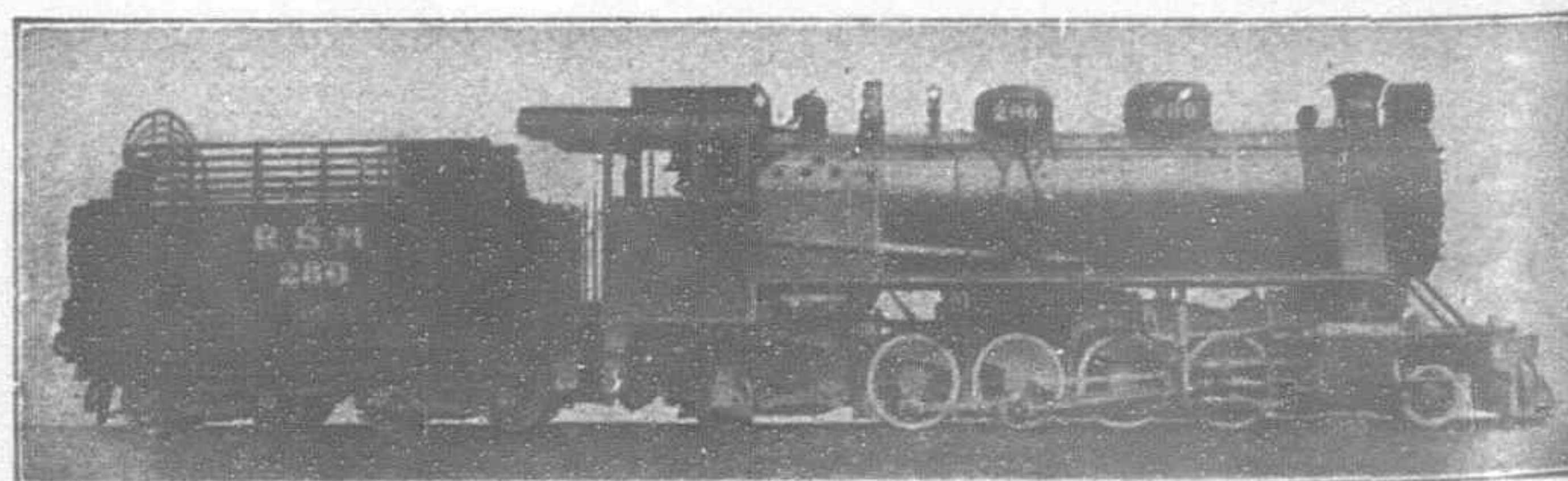
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